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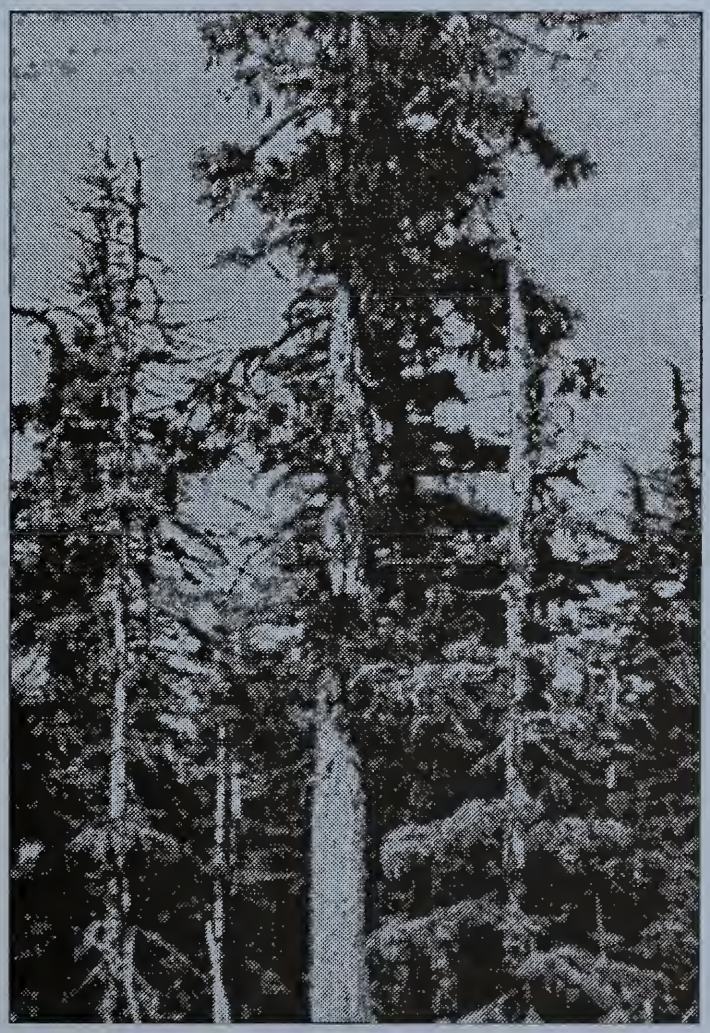
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National Forest
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December 1995

Port Houghton/ Cape Fanshaw Timber Sale Project

Draft Environmental Impact Statement

Volume 2





Prepared by

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Port Houghton/Cape Fanshaw

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Actual Unit #	Map #	Alternative
Salvage Area	261	B, D
Salvage Area	271	B, D
Salvage Area	291	B, D
Group Sel. Area	321	D
Group Sel. Area	322	D
Group Sel. Area	332	D
Group Sel. Area	398	C, D
26102	159	B, C, E
26103	164	B, C, D, E
27102	151	B, C, D, E
27103	158	D
27105	153	B, C, D, E
27107	160	B, C, D, E
27108	163	B, C, D, E
27109	169	B, C, D, E
27110	170	B, C, D, E
27113	164	B, D, E
29101	125	B, C, D, E
29102	137	B, C, D, E
29103	142	B, C, D, E
29104	146	B, C, D, E
29105	144	B, C, D, E
29106	131	B, C, D, E
29107	124	B, C, D, E
29111	134	B, D, E
29112	155	B, D, E
29113	167	B, D, E
29114	154	D
29115	150	D
29117	161	B, C, D
29119	168	B, C, D
29120	171	B, C, D
29121	172	B, D, E
29122	173	B, D
29123	174	B, D
29125	156	C, E
29126	145	C, E
29127	166	C, E
29130	177	C, D
29198	118	B, C, D, E
33301	132	B, C, D, E
311140	1	C
311141	14	C
311142	4	C
311144	6	C, D
311145	12	C, D
311146	8	C, D
311147	17	C
311199	15	D
312143E	11	D
312143W	10	D
321002	40	D
321003	39	D
321004	45	D
321006	54	C
321007	59	C
321008	53	B
321009E	61	B, C
321009W	56	B, D
321010	65	C, D
321011	70	C, D
321012	73	B, C, D
321013	72	B, C
321014	77	C
321015	85	C
321016	78	C
321017	88	B, C, D
321018	104	B, C, D
321019	95	C
321020	176	C
321021	100	C
321022	109	C
321023	115	B, C
321024	128	B, C, D, E
321025	121	B, C, D, E
321026	141	B, C, D, E
321027	140	B, C, D, E
321028	147	B, C, D, E
321029	148	B, C, D, E
321030	157	B, C, D, E
321197	116	B, D
321199	106	B, C, D
322031	55	C, D
322032	67	B, C
322033	79	B, C
322034	81	B, C, D
322035	83	B, E
322036	96	B, D, E
322037	94	B, C, D, E
322039	93	B, C, D
322040	110	B, C, D, E
322041	108	B, C, D, E
322042	120	B, D, E
322043	127	B, D
322044	133	B, D, E
331045	62	B, D
331046	82	B, D, E
331047	86	B, D, E
331048	92	B, D, E
331049	112	B
331187	113	B, D
331188	105	B, D, E
332050	33	B, C, D, E
332051	35	D
332052	41	D
332053	37	D, E
332054	36	D, E
332055	51	D, E
332056	46	E
332057	64	E
332058	49	D, E
332059	52	B, D, E
332060	43	D, E
332061	47	D, E
332063	44	D
332064	38	D
332065	175	B, C, E
332066	50	E
332067	57	B, D
332068	69	B, D, E
332069	60	B, C, D
332070	66	B, C, E
332071	74	B, C, D, E
332072	75	B, C, D, E
332073	87	B, C, E
332074	99	B, C, E
332075	102	D
332076	107	D
333077	34	E
333078	42	E
333079	48	E
333081	63	B, C, D, E
333082	71	B, C, D
333083	76	B, C, D, E
333084	90	B, D, E
333085	91	B, C, D, E
333086	111	B, C, D, E
333087	89	B, D, E
333088	97	B, D, E
333089	80	E
333090	84	E
333093	117	B, C, D, E
341094	58	E
341095	68	E
341097	98	E
341098	101	E
341099	114	E
341101	123	D
341102	138	B, C, D, E
341103	135	E
341104	143	C, D, E
341105	129	E
341107	139	E
341109	149	E
341110	162	E
341111	152	E
341112	136	E
341113	130	E
341114S	126	E
341114	119	E
341115	103	E
341116	122	E
341118	30	B, C
381131	2	D
381133	3	B, C
381135	9	B, C
381136	7	D
381137	13	B, C, D
381138	16	D
381139	19	B, C, D
381140	18	B, C
381199	5	D
398119	24	B, C
398120	26	B, C, D
398121	28	B, C, D
398122	31	B, C
398123	25	B, C, D
398124	32	C
398125	27	C
398126	21	C, D
398128	23	C
398129	29	C
398130	22	D

Legend (by Map No.) for Unit Numbering Scheme for Figures 2-1, 2-2, 2-3, and 2-4

Map #	Actual Unit #	Alternative
1	311140	C
2	381131	D
3	381133	B, C
4	311142	C
5	381199	D
6	311144	C, D
7	381136	D
8	311146	C, D
9	381135	B, C
10	312143W	D
11	312143E	D
12	311145	C, D
13	381137	B, C, D
14	311141	C
15	311199	D
16	381138	D
17	311147	C
18	381140	B, C
19	381139	B, C, D
21	398126	C, D
22	398130	D
23	398128	C
24	398119	B, C
25	398123	B, C, D
26	398120	B, C, D
27	398125	C
28	398121	B, C, D
29	398129	C
30	341118	B, C
31	398122	B, C
32	398124	C
33	332050	B, C, D, E
34	333077	E
35	332051	D
36	332054	D, E
37	332053	D, E
38	332064	D
39	321003	D
40	321002	D
41	332052	D
42	333078	E
43	332060	D, E
44	332063	D
45	321004	D
46	332056	E
47	332061	D, E
48	333079	E
49	332058	D, E
50	332066	E
51	332055	D, E
52	332059	B, D, E
53	321008	B
54	321006	C
55	322031	C, D
56	321009W	B, D
57	332067	B, D
58	341094	E
59	321007	C
60	332069	B, C, D
61	321009E	B, C
62	331045	B, D
63	333081	B, C, D, E
64	332057	E
65	321010	C, D
66	332070	B, C, E
67	322032	B, C
68	341095	E
69	332068	B, D, E
70	321011	C, D
71	333082	B, C, D
72	321013	B, C
73	321012	B, C, D
74	332071	B, C, D, E
75	332072	B, C, D, E
76	333083	B, C, D, E
77	321014	C
78	321016	C
79	322033	B, C
80	333089	E
81	322034	B, C, D
82	331046	B, D, E
83	322035	B, E
84	333090	E
85	321015	C
86	331047	B, D, E
87	332073	B, C, E
88	321017	B, C, D
89	333087	B, D, E
90	333084	B, D, E
91	333085	B, C, D, E
92	331048	B, D, E
93	322039	B, C, D
94	322037	B, C, D, E
95	321019	C
96	322036	B, D, E
97	333088	B, D, E
98	341097	E
99	332074	B, C, E
100	321021	C
101	341098	E
102	332075	D
103	341115	E
104	321018	B, C, D
105	331188	B, D, E
106	321199	B, C, D
107	332076	D
108	322041	B, C, D, E
109	321022	C
110	322040	B, C, D, E
111	333086	B, C, D, E
112	331049	B
113	331187	B, D
114	341099	E
115	321023	B, C
116	321197	B, D
117	333093	B, C, D, E
118	29198	B, C, D, E
119	341114	E
120	322042	B, D, E
121	321025	B, C, D, E
122	341116	E
123	341101	D
124	29107	B, C, D, E
125	29101	B, C, D, E
126	341114S	E
127	322043	B, D
128	321024	B, C, D, E
129	341105	E
130	341113	E
131	29106	B, C, D, E
132	33301	B, C, D, E
133	322044	B, D, E
134	29111	B, D, E
135	341103	E
136	341112	E
137	29102	B, C, D, E
138	341102	B, C, D, E
139	341107	E
140	321027	B, C, D, E
141	321026	B, C, D, E
142	29103	B, C, D, E
143	341104	C, D, E
144	29105	B, C, D, E
145	29126	C, E
146	29104	B, C, D, E
147	321028	B, C, D, E
148	321029	B, C, D, E
149	341109	E
150	29115	D
151	27102	B, C, D, E
152	341111	E
153	27105	B, C, D, E
154	29114	D
155	29112	B, D, E
156	29125	C, E
157	321030	B, C, D, E
158	27103	D
159	26102	B, C, E
160	27107	B, C, D, E
161	29117	B, C, D
162	341110	E
163	27108	B, C, D, E
164	26103	B, C, D, E
164	27113	B, D, E
166	29127	C, E
167	29113	B, D, E
168	29119	B, C, D
169	27109	B, C, D, E
170	27110	B, C, D, E
171	29120	B, C, D
172	29121	B, D, E
173	29122	B, D
174	29123	B, D
175	332065	B, C, E
176	321020	C
177	29130	C, D
261	Salvage Area	B, D
271	Salvage Area	B, D
291	Salvage Area	B, D
321	Group Sel. Area	D
322	Group Sel. Area	D
332	Group Sel. Area	D
398	Group Sel. Area	C, D

SILVICULTURAL SYSTEMS AND METHODS APPLICABLE TO THE PROJECT AREA

Even-Aged Management

Clearcut

Traditional clearcutting is a useful option for the old-growth western hemlock (*Tsuga heterophylla*) and Sitka spruce (*Picea sitchensis*) stands in the project area, where wildlife and other resource objectives do not rule it out. Numerous opportunities exist to incorporate special landscape design features in the layout of clearcut units to mitigate their appearance. These include techniques such as shaping and locating units to mimic the natural landscape and feathering of clearcut edges near muskeg, low-productivity areas, and landforms where naturally varied edges are common (such as at the top of natural openings). Reasons for clearcutting in the project area include those presented below:

- Most old-growth stands are beyond the age and condition where partial cutting would improve growth of the remaining stand.
- Clearcutting allows more solar radiation to reach the forest floor, which raises soil temperature and speeds up the decomposition of thick organic mats, increasing nutrient availability.
- It offers flexibility for selecting windfirm boundaries.
- Clearcutting and subsequent sanitation treatments are the most effective means of eliminating hemlock dwarf mistletoe (*Arceuthobium tsugense*).
- It tends to result in a greater proportion of Sitka spruce in the regenerated stand (where logging systems are used that scarify soils), adding economic value and ecological diversity.
- It requires fewer miles of road construction for removal of a given amount of timber.
- The predominant species, western hemlock and Sitka spruce, are easily damaged and subject to wound infection with partial cutting.
- It is usually the most economically efficient method of logging.

Current Forest Service policy outlines seven circumstances under which clearcutting is allowed. In a June 4, 1992 letter from the Chief of the Forest Service to Regional Foresters and Station Directors, it is stipulated that clearcutting "would be limited to areas where it is essential" to meet forest plan objectives and involve one or more of the following circumstances:

1. To establish, enhance, or maintain habitat for threatened, endangered, or sensitive species.

2. To enhance wildlife habitat or water yield values, or to provide for recreation, scenic vistas, utility lines, road corridors, facility sites, reservoirs, or similar development.

3. To rehabilitate lands adversely impacted by events such as fires, windstorms, or insect or disease infestations.

4. To preclude or minimize the occurrence of potentially adverse impacts or insect or disease infestations, windthrow, logging damage, or other factors affecting forest health.

5. To provide for the establishment and growth of desired trees or other vegetative species that are shade intolerant.

6. To rehabilitate poorly stocked stands due to past management practices or natural events.

7. To meet research needs."

Clearcut with Reserve Trees

Under this variation of the clearcutting method all of the stand is cut except for scattered trees that are reserved for various purposes, as described later. This method resembles the seed tree method, but the reserve trees are generally not relied on to regenerate the site. Advantages are the same as for clearcutting.

Clearcutting with reserve trees is appropriate for many of the medium-to-high productivity stands in the area. As discussed for clearcutting, it is necessary to consider design of units for visual quality as well as logging feasibility. Additional advantages and criteria for application are noted below.

1. The reserve trees are standing residuals for snag recruitment and large down woody debris when blown over. This is important to many of the ecological functions of the site. When the trees are standing, cavity-nesting wildlife can benefit, and trees can provide some mitigation for visual impacts. When blown over, uprooted trees create pit and mound microrelief which increases soil drainage, increases decomposition rates of deep organic soil layers, and exposes the mineral soil that promotes regeneration of Sitka spruce.

2. The reserve trees can be clustered for efficiency. Untreated enclaves can be left within the unit to soften the visual appearance of the area and make it appear more natural. Reserve enclaves can be designed for operational efficiency by considering setting locations.

For analysis purposes, up to 10 percent of the net scribner volume may be retained within a harvest unit classified as clearcut with reserves. All units not listed in the categories below are considered clearcut and clearcut with reserves. Reserve trees are prescribed in clearcuts where operationally feasible, and are subject to the loggers' ability to operate safely, with reasonable efficiency.

Overstory Removal

This is the removal cut of a two-storied (upper canopy and mid-canopy) stand, releasing the uniform understory (see Shelterwood below). Units with a functionally two-storied stand structure considered for overstory removal include: 331187, 398120, 398127, and 398130.

Shelterwood

Conventional shelterwood harvest includes both the initial operation (the seed cut) and the final operation (the **removal cut**, sometimes referred to as **overstory removal**). In the uniform shelterwood method, regeneration must be protected during the removal cut. The number of trees retained in a shelterwood usually ranges from 10-30 mature trees per acre.

The uniform shelterwood method is not appropriate for the project area for two reasons: (1) it is not needed to provide seed and shelter for the new generation of trees; and (2) removal of the shelter trees would be an expensive, operationally difficult, and unnecessary procedure. Nevertheless, some stands in the project area have a stratified structure, with scattered large trees overtopping another stratum. These stands qualify for an overstory removal, which would release the understory stratum for timber production, taking advantage of the advanced growth for a potentially shortened future rotation. Compared to clearcutting, overstory removal would maintain more vertical habitat structure for wildlife.

Shelterwood with Reserves

In the project area, the shelterwood with reserves method leaves shelter trees on site for purposes other than regeneration of the new stand. Shelterwood with reserves provide important ecological functions: left standing, they benefit cavity-nesting wildlife; blown down, they would provide soil disturbance patterns within harvest units throughout the rotation, form pit-and-mound microtopography, increase soil development, and provide a regeneration site suitable for desired species.

Because of the different objectives for shelterwood in this area, the reserve trees selected for the site should be culls, those with little or no commercial value. It is unlikely that this would have adverse genetic effects on the successor stand, since cull trees that have survived hundreds of years probably represent trees that were sound, healthy competitors for at least the span of a normal rotation.

Although some of the reserve trees would blow down; other trees would remain standing on the unit, providing structural diversity to the new stand. Because of the irregular blowdown patterns, only portions of the area will have pit-and-mound topography resulting from windthrown trees. The irregular nature of the shelterwood would encourage wider species composition and structural variation than other methods. Other issues that should be addressed with the shelterwood method include:

Economics

The shelterwood method is more expensive than clearcutting.

Feasibility

Harvest unit planning has identified units where partial harvesting can be included in the design due to operational feasibility (logging equipment capability).

Technology

Local experience and equipment availability may limit the amount of shelterwood and other partial cutting applications. Partial harvest capability by logging system is discussed in a subsequent section within Timber.

Landscape Design

It appears that the shelterwood with reserves method has the greatest benefit when used on slopes of about 30 percent or less—those conditions most subject to podzol formation. In many cases, it should be possible to design harvest units with a combination of clearcutting and shelterwood with reserves, using each method where it is best suited. In addition, by combining treatments in the same unit, we would have side-by-side comparisons of results. As described elsewhere, this approach facilitates monitoring and adaptive management strategies.

For analysis purposes, a unit is classified as shelterwood with reserves or overstory removal where approximately 10 percent to 50 percent of the net scribner volume is retained within the unit. There are 57 units where shelterwood with reserves is prescribed for part or all of the unit.

Uneven-Aged Management

Group Selection

This management method has been described as uneven-aged management on a forest (large-scale) basis and even-aged management on a group (small-scale) basis. A group is similar to a forest gap, less than stand size but larger than the area occupied by a single tree. Group selection can be applied up to about 2 acres. Beyond that point, the method would be considered a small clearcut, which is a viable approach for meeting some objectives.

Group selection is feasible for sanitation/salvage of areas with Alaska yellow cedar decline or in areas with specific visual quality objectives. Because of the difficulty of tracking and controlling planting and other cultural operations on numerous small units, it is likely that natural regeneration would be used with this method. Most groups would regenerate to hemlock. Where possible, spruce or cedar should be left on edges as a seed source.

Potential logging methods for group selection include helicopter, cable, and ground-based skidding. With helicopter logging, it is difficult to get sufficient site disturbance to regenerate Sitka spruce or disturb substantial areas with podzol development. Opportunities to cable log

groups are limited. Ground-based skidding is not practical because of steep slopes and areas with saturated soils.

Windthrow would be a serious problem with group selection. To minimize the risk, groups should be linked to bogs, fens, and peatlands or other windfirm boundaries wherever possible.

For analysis purposes, 25 percent of the net scribner volume would be recovered during the first of four planned entries over approximately 30-year periods in the course of this rotation. The following units have some group selection harvest prescribed: 321025, 321197, 398123, 398126, 398130, 332042H, and 398127H. In addition, one large group selection area that covers the lower portions of the 321, 322, 331, and 332 watersheds (the flats on the north side of Cape Fanshaw) totaling 546 acres, is proposed for helicopter harvest in Alternative D. In this group up to 25 percent of the net scribner volume would be removed.

Individual Tree Selection

This method involves the harvest of individual trees rather than groups of trees. In concept, trees are removed from all size classes, creating a balanced distribution within the stand. In practice, the method is difficult to apply on a sustainable, long-term basis. Control of species composition is exacting, due to different growth rates, shade tolerances, and regeneration habits. Desired stocking levels are often impractical, since cutting of small, non-merchantable trees at every entry can be expensive and operationally unfeasible. This regeneration method frequently leads to high-grading (removal of preferred trees only) of the stand. The individual tree selection method is not applicable to the project area.

Intermediate Stand Treatments

Sanitation and Salvage

These treatment types are integrated into several of the silvicultural approaches previously described. Logging of individual trees in areas with cedar decline is classed as sanitation/salvage, since harvest is not designed to regulate the stand as described earlier. This treatment is intended to provide a high value yield from a defective stand with moderate potential and low current net productivity. It should leave a thrifty stand of good quality growing stock, releasing any existing advanced regeneration. Wildlife travel corridors and nesting structure would be maintained. There would be minimal visual impact. Some windthrow is desired for the areas prescribed for salvage treatments. These areas have significant amounts of Alaska cedar decline, which is associated with poor soil drainage. When blown over, uprooted trees create pit and mound microrelief which increases both soil drainage, and decomposition rates of deep organic soil layers.

For one salvage unit proposed for the Stikine Area (totaling 679 acres), up to 50 percent of the net scribner volume would be recovered under helicopter harvest operations in Alternatives B and D.

Precommercial Thinning

This treatment is a future option in regenerated stands to reduce overly dense conditions and increase crop tree growth. It also offers an opportunity to control species composition. No stands in the project area are presently in need of precommercial thinning; however, site preparation of approximately 5 to 10 percent of proposed harvest units would include thinning of advanced regeneration.

Commercial Thinning

This treatment is an option in regenerated stands, but the predominant species are thin-barked and subject to logging damage. Present silvicultural decisions and treatments do not preclude commercial thinning in the future. Commercial thinning opportunities are recognized for units where site productivity would provide a potential increased timber yield and would amount to portions of approximately 25 percent of the proposed harvest units in any alternative.

Specific Silvicultural Techniques and Approaches

Several silvicultural approaches planned for the Port Houghton/Cape Fanshaw project area are independent of silvicultural system or method. These include:

Mitigation of Cedar Decline (working hypothesis)

Some ecologists believe that cedar decline is a unidirectional succession that ultimately results in a climax community of bog or muskeg. Widespread succession from forest to bog vegetation may be partly caused by podzol formation, nutrient immobilization, and lack of soil disturbance (Bormann and Sidle 1990). These scientists suggest that deep mixing of the soil could set back this succession and restore soil productivity.

Suggested technique - Use deep mechanical disturbance in areas with cedar decline to bring mineral soil to the surface. The salvage area and group selection areas at the base of the 321, 322, 331, and 332 watersheds are helicopter logging units that rely on the windthrow, which would be generated from the many small groups harvested throughout the units, to create soil disturbance.

Expectation - If the working hypothesis is correct, succession would be set back to the point where a wider range of species is capable of growing on the site, and the podzol development would have been reduced. Potentially, the treatment could avert the conversion of previously productive timber sites to bog or muskeg.

Dwarf Mistletoe: Management of Infected Stands

Hemlock dwarf mistletoe infects many western hemlock stands in the project area. Dwarf mistletoe affects tree growth and stand productivity dramatically. Witches brooms and

swellings can adversely affect height and diameter growth, reduce tree vigor, and make infected trees more susceptible to insects and other diseases. Tree mortality may increase. Bole infections may reduce wood quality and provide infection courts for decay fungi.

Total control of dwarf mistletoe in existing stands is probably not feasible. Instead, it is more realistic to attempt control in the regenerated stand following harvest. Ways to reduce dwarf mistletoe in the new stands include:

- Clear-cut infected stands. Since dwarf mistletoe is an obligate parasite, it cannot live or reproduce on slash or downed logs.

- Consider dwarf mistletoe in design and layout of clearcut boundaries. Severely infected western hemlock should not be left on the clearcut perimeter. Non-susceptible species should be left on the harvest-area boundaries to reduce the source of inoculum and provide a mixed-species stand in the clearing.

- If resource values and objectives allow, use larger harvest units in infected stands, to reduce the relative area exposed to infected trees on the edges of the harvest unit.

- Use the silvicultural methods, clearcut with reserves and shelterwood with reserves only in stands or portions of stands where reserve trees are uninfected western hemlock or alternate species, such as Sitka spruce or Alaska-cedar.

- Where group selection is prescribed, consider the same recommendations given for clearcutting.

- Clean heavily infected stands after logging. Dwarf mistletoe infections on nonmerchantable trees left after logging are an infection source for the new stand. Cutting these trees would remove the infection source. In heavily infected stands, many smaller nonmerchantable trees would have latent infections that are not apparent for several years. Control operations should assume that these trees are infected, and they should be killed.

- Defer cleaning of lightly infected stands until the precommercial thinning. Recent research has shown that infection levels in western hemlock regeneration beneath infected residual trees is lower than those recorded for similar stands further south. In addition, dwarf mistletoe infections in second-growth western hemlock usually occur in the lower crown, where spread of the disease is reduced and infected branches are often killed by shading. At the time of precommercial thinning, use the treatment as an opportunity to clean the stand of dwarf mistletoe. This can be done by cutting all western hemlock infected with dwarf mistletoe, selecting other species such as Sitka spruce as crop trees, and—the least preferred method—pruning of infected branches in situations where infection is confined to the lower crown of the tree.

How Wind and Its Effects Were Considered

For the proposed harvest areas, wind is a key consideration for management. Wind is the dominant natural disturbance mechanism in Southeast Alaska. Historic silvicultural systems and harvest patterns have been designed to avoid windthrow to the extent feasible. At Port Houghton/Cape Fanshaw, however, silvicultural prescriptions consciously integrated wind effects into treatment designs to attain ecological benefits: mixing of organic layers with a mineral substrate, creation of pit-and-mound microtopography, reduction of podzolization, seed source for regeneration of the new stand, and maintenance of a diverse vertical stand structure.

The challenge of project design at Port Houghton/Cape Fanshaw is to minimize the economic losses associated with windthrow, while realizing some of the ecological benefits of wind as a disturbance mechanism. Those apparently conflicting objectives can be achieved to some degree by considering wind effects at both the landscape and the stand levels.

Wind Data for the Port Houghton Area - Detailed information on ocean winds has been collected by the National Oceanic and Atmospheric Administration (NOAA). These data, which are summarized from the Five Finger weather buoy near Port Houghton, cover seven years from January 1985 to December 1992. This information provides a basis for examining key climatic parameters, including wind speed, direction, frequency, duration, and seasonal differences.

Significant findings include:

- **Wind Speed:** Major wind gusts at the buoy were recorded. For the entire eight-year period, there were no gusts that exceeded 70 mph, and only eight gusts were 60 mph or greater. Average maximums were in the 40-50 mph range.

  None of these events could be considered major storms. This is not unexpected, since the significant storms that shape the forests of Southeast Alaska occur only infrequently. A major wind event occurred around 1860, creating the 120 year-old western hemlock stands scattered along some of the ridge tops in the western portion of Cape Fanshaw.

  The location of the project area also affects wind speed and other characteristics. The many islands to the west tend to protect the Port Houghton area from direct exposure to ocean winds.

- **Wind Direction and Seasonal Differences:** The most consistent wind direction was from the southeast. In fact, virtually all of the major wind events came from this quadrant. More gentle winds from the north and northeast were also common. During late spring and summer, the direction tended to shift to the west and southwest, but these winds were also moderate.

Interpretations of the wind data support the approaches used to develop silvicultural prescriptions and harvest plans for the project area. The primary direction of storm winds was consistently

considered during project planning and layout. In many cases, the modifying effects of topography were considered in prescribing treatments.

Provided below are specific ways that wind and its effects were considered in unit location, design, and harvest method:

Sanitation-Salvage - This intermediate silvicultural practice is prescribed on south and southeast slopes in the Stikine Area (VCU's 86, 87, and 89) that are visually sensitive and subject to yellow cedar decline. Many of these areas are characterized by short, open-grown trees, those that are inherently more windfirm. Major blowdown is not expected to be a problem in these areas following logging. However, it is intended that some additional opportunities for soil disturbance (windthrow, creating pit-and-mound microrelief) are created during this intermediate stand treatment by creating new edges, exposing portions of the stand to the effects of wind.

Group Selection - This uneven-aged regeneration method was prescribed for a variety of situations, including: (1) areas that are visually sensitive, such as the North Point area to the east of Sandbourn Canal and the upper slope head waters of Negro Creek; (2) isolated small stands or patches of high volume and value, such as the flats facing Port Houghton on the north side of Cape Fanshaw; and (3) opportunities to apply an alternative silvicultural treatment consistent with concepts from ecosystem management and adaptive management.

On the flats, the timber tends to be shorter and more open-grown. These stands are inherently more windfirm than the taller and more dense stands of the upslopes. On both the flats and the isolated upslopes, groups would be tied to muskegs and other natural openings where feasible, to increase edge stability.

Most of these groups would be logged with helicopters, resulting in minimal soil disturbance. Reducing windthrow and other soil disturbance mechanisms could have negative long-term ecological effects, since there would be little mixing of organic layers and mineral soil resulting from management activities. It is anticipated that windthrow potential would increase in group selection harvest units on upland slopes. This provides an opportunity for long-term monitoring or observation of ecological functioning as compared with other silvicultural systems, an application of the adaptive management philosophy of management as an experiment.

Clearcut, Clearcut with Reserves, and Shelterwood with Reserves - Wind effects were initially considered at the unit design level. In many instances, unit shape and orientation were altered to reduce the likelihood of blowdown. Since the direction of prevailing winds is from the southeast, units were located to avoid ridge top notches that could funnel and thereby accelerate the winds. Where possible, cone-shaped openings were oriented with the narrow end toward the prevailing winds. In the Sitka spruce and western hemlock forest types, it was often necessary to prescribe greater amounts of retention for visual mitigation purposes, than in the western hemlock/Alaska-cedar or mixed conifer forest types. Conversely, lower productivity areas were often less vulnerable to excessive windthrow, since the trees were more open-grown and shorter. Ultimately, a group of factors had to be considered on a unit basis. The objective

has been to balance the need for ecological disturbance by wind with the need to avoid excessive deterioration of residual stands adjacent to harvest areas.

Some units were consolidated to reduce the vulnerable forest edge, especially the intervening strips that connect harvest areas (units 29126, 29127, 29130, 332075, 341105, and 341107). The initial unit location was field-checked and adjusted to tie with windfirm boundaries, such as muskeg or scattered, open-grown trees. For example, the upper portions of Unit 332075 were tied to a windfirm V-notch to avoid wind-scouring into the forested edge.

Within harvest units, many prescriptions call for retention of reserve trees. Cull trees are preferred in all species, since there is no intention of harvesting these trees later. Species selection also affects reserve tree selection. For example, yellow cedar is not only a desirable leave tree for seed production, but it also tends to be windfirm due to its shorter height, open-growing habit, and other crown characteristics. Sitka spruce, on the other hand, is only marginally more windfirm than western and mountain hemlock, but it often assumes a dominant or emergent position in the stand, and is thus more acclimated to wind exposure. Again, the silvicultural prescriptions have attempted to be site-specific in recognizing the localized potentials of each stand.

Realistically, most of the reserves are expected to blow down. This will yield ecological benefit with no economic loss except some increase in logging cost. During sale layout, trees that can be left with little or no cost should be designated as reserves. Site-specific design on a setting basis will probably be the most practical and effective approach to identifying reserves that meet resource, operational, and economic objectives.

Alternatives B and D contain the highest proportion of areas where windthrow is desirable. These areas are the volume class 4 and 5 stands in the Stikine salvage area, and the lowlands of the 321, 322, 331, and 332 group selection areas in north Cape Fanshaw. Alternatives C and E contain fewer proposed harvest acres where windthrow is desirable, thus Alternative C would have the highest risk of negative windthrow impact.

PORT HOUGHTON/CAPE FANSHAW EIS
INTEGRATED UNIT SUMMARY FORM:

DESCRIPTIONS OF DATA FIELDS AND COMMENTS ON USE

The Integrated Silvicultural Prescription form developed for the Port Houghton/Cape Fanshaw Environmental Impact Statement (EIS) incorporates a broad array of data and analysis that pertains not only to timber, but to a broad range of resource objectives. The form captures the logic leading to development of recommended silvicultural alternatives.

The following is a summary of the significant resource considerations leading to the development of the unit. The codes and abbreviations used on the card are described below:

Unit Identification includes:

- **VCU**: Value Comparison Unit, a broad land management classification.
- **Unit number**: A numbering scheme that combines the watershed and subwatershed number (first three digits), and additional numbers uniquely assigned to each unit.
- **Unit acres** (Accuracy is ± 2 acres).
- **Aerial Photography**: The year, flight line, and photo number of the aerial photograph for the unit.
- **Total Net MBF**: Computer generated number; accuracy is to the nearest 5 MBF.

Site Characteristics are a summary of the physical, biological, and ecological environmental setting for the unit. They include:

- **Topographic Characteristics**: Elevation, slope, and aspect. The average elevation and slope are calculated by formula from the minimum and maximum range typical of the unit. A range of aspect is recorded, as well as the prevalent aspects for the unit as a whole.
- **Biological and Environmental Data**: Includes the biotic and physical factors that affect silvicultural strategies. All biological and environmental information is displayed by Volume Class (VC).
- **Ecological classifications** are referenced to the Chatham Area Plant Association Guide (1/20/94). The predominant forest series and codings are:

Western Hemlock	WH
Western Hemlock/Alaska Yellow-Cedar	HC
Mixed Conifer	MX
Sitka Spruce	SS
Mountain Hemlock	MH

- **Plant Associations** are recorded using the three-digit codes from the Plant Association Guide. Up to two codes are permitted for each VC.
- **Site Index** was measured or estimated using the 50-year index for western hemlock unless otherwise noted. Sitka spruce site index was used in the SS forest series. The

Unit Attribute for site index was weighted-averaged by acres and rounded to the nearest 5%.

- **Windthrow Risk** is the estimated likelihood of catastrophic losses due to wind. The classification incorporates existing site and stand conditions, but also gives weight to the increased wind exposure after timber harvest. Unit walk-through data were cross-checked by the Plant Association Guide Management implications to provide consistency. The Windthrow Risk by VC is used to calculate the acreage-weighted average for the unit. Categories of Windthrow Risk include:

Extreme	E
High	H
Moderate	M
Low	L

- **Soil Drainage** was estimated during reconnaissance and recorded on the unit walk-through card. Estimates were compared with Table A 4-1 in the Plant Association Guide to ensure consistency. Soil Drainage by VC is used to calculate the acreage-weighted average for the unit. Categories include:

Poor	P
Moderate Poor	MP
Moderate	M
Moderately Well	MW
Well	W

- **Forest Protection** includes existing conditions that influence silvicultural treatment opportunities. Ratings are low, moderate, or high in significance. Examples of conditions include windthrow, mistletoe, and Alaska yellow-cedar decline. The Forest Protection condition is noted as a Unit Attribute if present on at least 10% of the unit.
- **Regeneration Potential** is rated by VC from the walk-through. Field estimates are cross-checked with the Plant Association Guide to provide consistency. The Unit Attribute is an acreage-weighted rating.
- **Mass Failure Risk** is a subjective rating based on field reconnaissance and information on soils, slope, geology, plant association, and evidence of mass movement. Ratings are weighted by acres to determine the Unit Attribute. An interdisciplinary approach involving specialists in silviculture, watershed, engineering, and/or soils was used to determine the rating for potential high risk areas. In general, units with high mass failure risk ratings were dropped or areas of high risk were deleted from units.

Stand Characteristics include the key environmental variables (timber volume, physical, and stand structure attributes, etc.) used to develop the silvicultural prescription. The field exam method, date, and individual(s) who field-reviewed the unit are listed. The number and type (measure or count) of the stand examination plot are recorded. Atterbury Consultants Inc. (ACI) Super Ace cruising program was used for timber data compilation and calculation.

A. **Stand Description** is a verbal overview of stand characteristics, including commercial timber attributes, stand structure, environmental conditions, forest protection considerations, and suitability for management.

B. **Timber Volume Statistics** are recorded at two levels of resolution, Unit level and Volume Class by VCU: (1) **Unit summary volume** (net sawlog plus utility) is based upon acres by VC in the unit and the VC averages from a compilation of plots from all units sampled within the VCU. (2) **Unit Level Plot Data** are calculated from plots that were sampled within the unit. In the case where a VC was not field sampled, the VCU average was entered. Differences in cull, timber size, and species composition between units are reflected in the unit level data. However, precision of the unit level data is limited by sample size and sample coverage of the field plots. The compilation of plots at the VCU level allows more statistical confidence in unit, strata, and alternative volume estimates. Unit level plot data totals are VC averages weighted by VC acres. Mean DBG is the quadratic mean diameter or merchantable trees only. The percent by species is a percent of volume. Mountain and western hemlock are aggregated in timber volume statistics. Net Sawlog Plus Utility Recoverable by Prescription is calculated in the Marking Rules section of the form, assuming the selected prescription is implemented.

C. **Stand Structure Statistics** are summaries from the unit level plot data. In the case where a VC was not field sampled, the VCU average was entered. The percent by species is percent of basal area in merchantable size classes. As described for volume statistics, the precision of unit-level data is limited by sample size and coverage of the field plots; thus, compilation of VC averages at the VCU level allows more confidence in stand structure statistics. Dominant average height is the average height of dominants. Submerchantable stocking percent is the percent by area of the stand well-stocked with acceptable advanced reproduction, saplings, and/or poletimber. Normal stocking percent is the current basal area compared to a fully stocked stand as determined from normal yield tables. Unit level plot data totals are VC averages weighted by VC acres.

Resource Opportunities and Constraints are the resource considerations used to develop the range of silvicultural alternatives. The primary source of opportunities and constraints was data and analysis from resource specialists. Site-specific conditions that were not noted by other resource specialists but observed in the field by silviculturists were documented, and the appropriate resource specialist(s) was conducted. Information included in the Resource Opportunities and Constraints was used to develop the "Quick List" resource summary discussed elsewhere in the report.

Integrated Resource Objectives described for each stand reflect and are consistent with Resource Standards and Guidelines from the Tongass Land Management Plan (TLMP) as Revised. The unit-specific resource opportunities and constraints are put in context of the TLMP by listing of feasible integrated resource objectives that will be achieved by the silvicultural prescription.

Rationale for Silvicultural Treatment discusses reasons for selection of the recommended silvicultural option. Relative advantages of the recommended alternative are described and compared with other options.

Integrated Management Prescription incorporates a broad range of considerations, including:

A. **Description of Unit Boundary Determination**
B. **Timber Marking Rules** that give specific direction for sale layout. The rules include guidance on leave tree specification, species considerations, and other operational details.
C. **Logging Systems** for the unit gives a summary of the forest engineering considerations. Details on logging systems are included in a separate report.
D. **Soil, Water, and Wildlife Conservation** describes the actions recommended for protection of these resource values. Best Management Practices (BMP's) from the TLMP are included where applicable.
E. **Regeneration Method** describes the techniques recommended for establishing the new stand in areas where regeneration harvest is prescribed.
F. **Forest Productivity Activities** include those actions or effects that are expected to maintain or increase the productivity of the site. In some cases, this may include cultural treatments such as planting or thinning, but ecological effects are also discussed.
G. **Expected Future Stand Conditions** describes a sequence of anticipated stand development over the course of the next rotation. Major conditions and potential silvicultural activities include (1) regeneration of the new stand, (2) precommercial thinning ("intermediate harvest[s]"), and final harvest ("rotation"). Because of future uncertainty, a range of ages is given for planned actions.

Monitoring Plan includes the activities that may be needed to ensure that silvicultural activities are carried out on time and within acceptable standards. Monitoring is an integral part of the adaptive management approach used throughout this project. The Silvicultural Prescription Monitoring Plan does not include monitoring of other resource values and conditions, such as wildlife or water quality. No attempt was made to specify monitoring beyond the early development of the new stand. Though the same monitoring may be specified on all units, such efforts may be done on sample basis for cost effectiveness.

It has to be anticipated that there will be some minor changes to the units as depicted on these descriptions. It is virtually impossible, without final field layout of every unit boundary and road, to not have some changes. Exact conformance to preset lines, regardless of values, would not be proper management. Opportunities to not only protect newly discovered situations but also to optimize management intent without changing the environmental impacts have to be anticipated and instituted. The resources, as they are now known and analyzed, have been protected or enhanced to the greatest extent practicable.

If changes and impacts develop which are outside the scope of the impacts envisioned with this EIS, additional documentation may be required.

In the review of the unit descriptions, specific mitigation measures are shown and these should be self-explanatory. A few items that may require clarification are described below:

Suspension/Logging Requirements:

Full: Logs have to be fully suspended when yarded. Achieved with helicopter yarding with cable logging under certain topographic conditions.

Partial: Only one end of the log touches the ground while being yarded. Normally attainable with cable yarding systems with adequate deflection and the location of proper tailholds.

Cable: Describes high-lead or other similar type equipment. No suspension requirements specified.

No system listed: Can be yarded with cable or with "shovel" (log loader is used to yard logs).

Stikine Area Volume Statistics

February 15, 1994

STIKINE Volume Class Strata Totals

VC-L	VC-4	VC-5	VC-6	VC-7	TOTAL ACRES	GROSS MBF	Net + Utility MBF	Utility MBF	Net Sawlog MBF
48	1,155	1,258	478	7	2,927	85,413	65,745	6,483	59,262
2%	39%	43%	16%	0%	100%	100%	77%	10%	90%
447.3	20,955.3	41,198.0	22,210.1	601.9	per acre=	29.2			
307.6	16,549.0	30,480.5	17,939.3	468.4	per acre=		22.5		

Total Project Area

% Total Unit MBF Recovered	Net Recoverable Sawlog MBF
86%	204,740
100%	237,346

Stikine Area

% Total Unit MBF Recovered	Net Recoverable Sawlog MBF
85%	50,290

BY VCU Strata Average Bf Volumes/Acre

VC-L	VC-4	VC-5	VC-6	VC-7	Percent
5,996	12,919	21,832	33,847	55,071	90.1%
383	1,409	2,396	3,646	11,087	9.9%
6,379	14,328	24,228	37,493	66,158	155.0%
9,276	18,143	32,747	46,419	85,014	100.0%

UNIT #	Estimated Acres by Volume Class					TOT AC	GROSS MBF	Net Sawlog Plus Utility MBF	Utility MBF	Net Sawlog MBF	VCU's 86,87,89 UNIT #	Total Harvest Volume %	Net Recoverable Sawlog MBF
26102	-	14.2	22.0	37.8	-	73.9	2,729.3	2,151.1	210.3	1,940.8	26102	90%	1,747
26103	2.0	37.2	31.0	-	-	70.2	1,708.6	1,296.8	127.5	1,169.3	26103	88%	1,029
27102	-	-	1.2	56.3	-	57.5	2,653.3	2,140.4	208.2	1,932.2	27102	100%	1,932
27103	-	13.2	-	22.0	-	35.2	1,259.0	1,012.6	98.7	913.9	27103	100%	914
27105	-	-	43.0	-	-	43.0	1,408.8	1,042.3	103.1	939.2	27105	100%	939
27107	-	29.5	90.3	-	-	119.8	3,493.3	2,611.2	258.0	2,353.2	27107	89%	2,094
27108	-	44.1	28.7	0.5	-	73.2	1,759.6	1,343.2	132.5	1,210.7	27108	91%	1,102
27109	-	7.7	58.0		-	65.7	2,038.0	1,514.8	149.7	1,365.0	27109	100%	1,365
27110	0.6	54.7	-	-	-	55.4	999.1	788.4	77.4	711.0	27110	90%	640
27113	1.3	10.2	-	42.4	-	53.9	2,167.0	1,745.5	169.6	1,575.9	27113	100%	1,576
29101	-	-	6.1	8.8	-	14.9	606.2	476.1	46.5	429.6	29101	100%	430
29102	1.1	-	22.4	-	-	23.5	743.9	549.9	54.1	495.8	29102	91%	451
29103	-	14.8	28.0	-	-	42.8	1,183.9	889.3	87.8	801.5	29103	91%	729
29104	1.7	14.3	0.1	10.8	-	27.0	781.0	623.9	60.5	563.4	29104	100%	563
29105	2.1	9.2	5.5	14.0	-	30.8	1,015.6	802.8	77.9	724.9	29105	100%	725
29106	1.0	37.3	13.9	35.4	-	87.6	2,783.7	2,204.2	215.3	1,988.9	29106	90%	1,790
29107	-	7.7	46.8	7.4	-	61.8	2,013.2	1,519.7	149.8	1,369.9	29107	90%	1,233
29111	-	11.2	28.4	-	-	39.6	1,132.5	848.0	83.8	764.2	29111	95%	726
29112	0.7	19.8	46.0	-	-	66.5	1,871.6	1,402.3	138.4	1,264.0	29112	92%	1,163
29113	-	46.2	11.1	14.5	-	71.8	1,875.6	1,475.1	144.6	1,330.5	29113	92%	1,224
29114	-	45.6	19.4	-	-	65.0	1,462.1	1,123.0	110.7	1,012.3	29114	91%	921
29115	-	7.5	8.6	10.3	-	26.3	892.9	699.8	68.5	631.3	29115	100%	631
29117	4.1	27.5	0.8	-	-	32.4	562.1	438.7	42.2	396.6	29117	96%	381
29119	-	15.0	48.4	25.8	-	89.2	3,055.6	2,355.6	231.2	2,124.4	29119	95%	2,018
29120	-	21.1	34.3	22.0	-	77.3	2,525.6	1,956.9	192.0	1,764.9	29120	75%	1,324
29121	3.3	17.4	49.0	10.3	-	79.9	2,427.5	1,842.5	180.6	1,661.9	29121	94%	1,562
29122	-	0.2	-	85.9	-	86.1	3,992.1	3,224.4	313.6	2,910.8	29122	95%	2,765
29123	0.1	14.2	15.1	-	-	29.3	751.3	568.6	56.1	512.5	29123	93%	477
29125	-	49.9	-	-	-	49.9	905.3	715.0	70.3	644.7	29125	85%	548
29126	-	30.7	99.7	27.9	-	158.3	5,116.7	3,901.3	383.8	3,517.4	29126	95%	3,342
29127	-	66.4	101.8	-	-	168.2	4,537.9	3,417.4	337.4	3,080.0	29127	92%	2,834
29130	3.0	41.0	64.6	2.1	-	110.7	2,984.7	2,250.6	221.4	2,029.2	29130	95%	1,928
29198	-	-	10.2	18.5	-	28.7	1,193.6	941.5	92.0	849.6	29198	100%	850
33301	-	12.6	37.7	-	-	50.2	1,461.3	1,092.6	107.9	984.6	33301	95%	935
Salvage	0.9	399.3	250.6	21.5	7.0	679.3	17,054.0	13,069.0	1,319.7	11,749.3	Salvage	50%	5,875
Road r/w	26.4	31.3	20.1	4.4	0.0	82.3	1,679.1	1,271.7	118.9	1,152.9	Road r/w	100%	1,153
TOTALS:	48.2	1,155.0	1,258.1	478.6	7.1	2,927.0	85,412.7	65,744.8	6,483.2	59,261.6	TOTALS	86%	50,290

Chatham Area Volume Statistics

February 15, 1994

CHATHAM Volume Class Strata Totals

VC-L	VC-4	VC-5	VC-6	VC-7	TOTAL ACRES	GROSS MBF	Net + Utility MBF	Utility MBF	Net Sawlog MBF
156	2,418	2,170	2,924	78	7,747	260,364	207,512	28,797	178,084
2%	31%	28%	38%	1%	100%	100%	80%	14%	86%
643	43,350	71,865	138,836	5,671	per acre=	34			
499	33,110	56,409	112,846	4,649	per acre=		27		

Chatham Area % Total Unit MBF Recovered	Net Recoverable Sawlog MBF
87%	154,449

VCU 80, 81 Strata Average Bf Volumes/Acre

VC-L	VC-4	VC-5	VC-6	VC-7	Percent
5,000	11,434	21,153	28,645	55,071	82.0%
-	3,532	4,687	4,131	13,112	18.0%
5,000	14,966	25,840	32,776	68,183	75.8%
6,500	20,839	33,372	41,575	85,014	100.0%

UNIT #	Estimated Acres by Volume Class					TOT AC	GROSS MBF	Net Sawlog Plus Utility MBF	Utility MBF	Net Sawlog MBF	VCU's 80, 81 UNIT #	Total Harvest Volume %	Net Recoverable Sawlog MBF
311140	-	35.7	40.1	-	-	75.7	2,079.5	1,568.4	313.6	1,254.8	311140	95%	1,192
311141	-	62.9	0.9	18.4	-	82.2	2,104.3	1,566.5	302.3	1,264.2	311141	95%	1,201
311142	-	3.4	14.2	31.7	-	49.3	1,862.8	1,457.0	209.4	1,247.6	311142	94%	1,173
312143E	-	5.2	-	15.4	-	20.6	748.8	582.7	82.0	500.6	312143E	90%	451
312143W	-	5.2	-	9.9	-	15.1	521.0	403.1	59.4	343.7	312143W	90%	309
311144	2.8	-	23.9	66.7	-	93.4	3,587.1	2,816.4	387.4	2,429.0	311144	95%	2,308
311145	0.7	55.3	0.3	-	-	56.3	1,166.8	838.7	196.7	642.1	311145	93%	597
311146	2.3	64.8	30.4	-	-	97.5	2,380.5	1,767.4	371.5	1,395.9	311146	87%	1,214
311147	-	23.1	-	-	-	23.1	481.8	346.0	81.7	264.4	311147	97%	256
311199	-	46.1	8.3	-		54.4	1,237.7	904.4	201.7	702.7	311199	85%	597
381131	-	24.5	16.7	-	-	41.1	1,066.0	796.8	164.5	632.2	381131	85%	537
381133	3.5	28.0	17.4	-	-	48.9	1,188.0	887.0	180.6	706.4	381133	97%	685
381135	-	3.7	7.7	8.5	-	19.9	689.0	534.1	84.4	449.7	381135	97%	436
381136	0.3	16.8	-	9.0	5.4	31.5	1,186.0	916.7	167.4	749.3	381136	85%	637
381137	-	68.4	6.5	-	-	74.9	1,643.3	1,192.4	272.2	920.2	381137	95%	874
381138	-	14.3	4.8	-	-	19.1	458.2	338.1	73.0	265.1	381138	87%	231
381139	-	13.1	15.2	-	-	28.4	781.7	589.9	117.7	472.2	381139	96%	453
381140	-	25.1	-	50.1	-	75.2	2,605.1	2,017.0	295.6	1,721.4	381140	97%	1,670
381199	-	7.2	-	23.5	-	30.7	1,126.4	877.5	122.5	755.0	381199	85%	642
Road r/w	14.55	15.65	8.08	1.96	-	40.2	771.8	580.0	101.2	478.8	Road r/w	100%	479
Subtotal:	**24.2**	**518.5**	**194.5**	**235.1**	**5.4**	**977.6**	**27,685.9**	**20,980.1**	**3,785.0**	**17,195.1**	**Subtotal:**	**93%**	**15,943**

VCU 82 Strata Average Bf Volumes/Acre

	VC-L	VC-4	VC-5	VC-6	VC-7	Percent
	3,000	11,706	23,916	34,182	48,775	86.3%
	-	1,801	3,055	5,331	7,978	12.8%
	3,000	13,507	26,971	39,513	56,753	81.3%
	5,000	16,514	33,297	48,579	66,666	100.0%

UNIT #	Estimated Acres by Volume Class					TOT AC	GROSS MBF	Net Sawlog Plus Utility MBF	Utility MBF	Net Sawlog MBF	VCU 82 UNIT #	Total Harvest Volume %	Net Recoverable Sawlog MBF
321002	-	5.1	-	-	-	5.1	83.7	68.5	9.1	59.3	321002	98%	58
321003	-	10.8	2.1	-	-	13.0	249.4	203.5	26.0	177.5	321003	98%	174
321004	-	7.5	-	-	-	7.5	124.0	101.4	13.5	87.9	321004	100%	88
321006	-	8.0	17.1	13.3	-	38.5	1,349.9	1,096.6	137.8	958.8	321006	84%	805
321007	-	18.3	28.6	-	-	46.9	1,253.7	1,017.9	120.2	897.6	321007	70%	628
321008	-	-	1.1	18.2	1.1	20.4	996.4	813.2	109.4	649.1	321008	95%	617
321009E	-	3.6	5.7	16.7	-	25.9	1,058.7	860.7	112.7	748.0	321009E	88%	658
321009W	-	5.9	3.9	7.8	-	17.6	606.2	493.1	64.1	429.0	321009W	88%	377
321010	-	20.5	12.8	-	-	33.3	765.4	622.7	76.1	546.6	321010	100%	547
321011	-	-	9.0	-	-	9.0	300.0	243.0	27.5	215.5	321011	100%	215
321012	-	21.2	5.6	46.0	-	72.8	2,771.4	2,255.1	300.5	1,954.6	321012	97%	1,896
321013	3.1	2.7	17.1	4.0	-	26.9	824.7	665.8	78.5	587.3	321013	98%	576
321014	-	-	0.2	13.4	-	13.6	656.0	533.5	71.9	461.6	321014	91%	420
321015	-	-	6.2	18.2	-	24.3	1,087.8	884.1	115.7	768.4	321015	95%	730
321016	-	13.7	18.4	26.1	-	58.2	2,108.6	1,714.0	220.2	1,493.8	321016	90%	1,344
321017	-	11.5	3.3	41.0	-	55.8	2,289.9	1,863.1	249.2	1,613.9	321017	98%	1,582
321018	-	11.6	-	14.6	-	26.2	900.8	733.6	98.7	634.9	321018	89%	565
321019	-	12.8	27.8	41.4	-	82.0	3,149.0	2,559.2	328.8	2,230.4	321019	79%	1,762
321020	-	-	61.8	-	-	61.8	2,056.4	1,665.7	188.7	1,477.1	321020	98%	1,448
321021	-	22.4	1.1	14.3	-	37.7	1,097.6	894.3	119.6	774.8	321021	95%	736
321022	-	-	35.9	0.4	-	36.2	1,211.4	981.3	111.4	869.8	321022	95%	826
321023	-	1.2	24.3	40.2	-	65.6	2,779.5	2,258.2	290.5	1,967.7	321023	95%	1,869
321024	-	10.0	76.9	0.4	-	87.3	2,747.1	2,226.5	255.3	1,971.3	321024	95%	1,873
321025	0.1	7.6	3.6	81.5	-	92.7	4,202.4	3,418.1	458.9	2,959.3	321025	80%	2,367
321026	-	8.0	13.9	46.0	-	67.9	2,827.6	2,299.0	301.9	1,997.1	321026	90%	1,797
321027	-	13.0	12.3	48.4	-	73.6	2,973.6	2,418.3	318.8	2,099.4	321027	98%	2,057
321028	-	38.4	8.6	12.7	-	59.8	1,540.7	1,255.1	163.5	1,091.6	321028	100%	1,092
321029	-	10.0	19.1	45.4	-	74.4	3,002.8	2,441.0	318.0	2,123.0	321029	95%	2,017
321030	-	74.5	8.5	7.8	-	90.8	1,891.6	1,543.2	201.7	1,341.5	321030	98%	1,315
321197	-	0.3	3.0	54.8	-	58.1	2,766.1	2,249.6	301.8	1,947.8	321197	35%	682
321199	-	-	19.3	21.5	-	40.8	1,689.0	1,371.7	173.8	1,197.9	321199	100%	1,198
322031	2.2	14.6	13.1	14.5	-	44.5	1,396.0	1,132.8	144.0	988.8	322031	95%	939
322032	-	-	-	26.4	-	26.4	1,280.5	1,041.6	140.5	901.0	322032	98%	883
322033	-	-	0.1	35.3	-	35.4	1,717.1	1,396.6	188.3	1,208.3	322033	70%	846
322034	-	-	-	55.9	0.6	56.5	2,752.4	2,240.2	302.4	1,910.4	322034	95%	1,815
322035	-	7.5	27.6	-	-	35.1	1,041.9	844.9	97.7	747.2	322035	98%	732
322036	-	-	2.4	12.7	-	15.1	695.6	565.5	74.9	490.6	322036	95%	466
322037	-	-	45.0	-	-	45.0	1,497.0	1,212.6	137.4	1,075.3	322037	75%	806
322039	-	0.3	20.2	6.4	-	26.9	987.5	801.0	96.2	704.7	322039	98%	691
322040	-	17.1	34.4	4.5	-	56.0	1,645.3	1,335.7	159.7	1,175.9	322040	98%	1,152
322041	-	7.1	6.1	65.6	0.2	79.0	3,519.5	2,863.1	382.6	2,470.2	322041	98%	2,421
322042	-	-	21.0	12.8	10.8	44.7	2,043.9	1,687.5	218.9	939.9	322042	100%	940
322042H	-	50.7	30.3	-	-	81.0	1,846.7	1,502.4	183.9	1,318.5	322042H	25%	330
322043	-	-	7.6	17.7	-	25.3	1,112.9	904.4	117.6	786.8	322043	100%	787
322044	-	0.8	-	59.0	-	59.8	2,879.5	2,342.2	316.0	2,026.2	322044	98%	1,986
Group321	2.4	139.0	19.4	3.2	-	164.0	3,110.5	2,535.7	326.8	2,208.8	Group321	25%	552
Group322	15.1	136.4	25.4	9.4	-	186.3	3,629.0	2,943.0	373.2	2,569.8	Group322	25%	642
Road r/w	15.5	34.2	36.4	29.2	0.2	115.5	3,287.8	2,656.7	330.2	2,316.2	Road r/w	100%	2,316
Subtotal:	**38.3**	**746.1**	**736.2**	**986.4**	**12.9**	**2,519.9**	**85,804.7**	**69,756.8**	**8,954.3**	**60,171.3**	**Subtotal:**	**84%**	**50,624**

VCU 83 Strata Average Bf Volumes/Acre

	VC-L	VC-4	VC-5	VC-6	VC-7	Percent
	2,088	11,281	23,405	33,625	55,000	88.6%
	437	1,508	2,997	4,281		11.4%
	2,525	12,789	26,402	37,906	55,000	81.6%
	2,860	16,582	32,366	45,272		100.0%

UNIT #	Estimated Acres by Volume Class					TOT AC	GROSS MBF	Net Sawlog Plus Utility MBF	Utility MBF	Net Sawlog MBF	VCU 83 UNIT #	Total Harvest Volume %	Net Recoverable Sawlog MBF
331045	-	17.9	4.9	103.4	-	126.2	5,134.6	4,276.1	484.1	3,792.0	331045	90%	3,413
331046	-	19.3	-	16.4	-	35.7	1,061.8	868.0	99.3	768.7	331046	90%	692
331047	-	9.9	27.6	21.7	-	59.2	2,038.8	1,677.0	190.4	1,486.5	331047	100%	1,487
331048	-	-	18.5	67.9	-	86.3	3,670.0	3,059.9	345.9	2,714.1	331048	88%	2,388
331049	-	7.8	7.2	55.5	-	70.5	2,872.9	2,391.8	270.7	2,121.1	331049	98%	2,079
331187	-	-	-	19.1	-	19.1	862.9	722.5	81.6	640.9	331187	40%	256
331188	-	7.0	13.4	16.6	-	36.9	1,297.5	1,069.5	121.4	948.0	331188	98%	929
332050	-	2.4	4.3	-	-	6.7	179.3	144.5	16.5	127.9	332050	100%	128
332051	-	12.6	-	-	-	12.6	209.3	161.4	19.0	142.4	332051	100%	142
332052	-	6.3	7.3	-	-	13.6	340.6	273.2	31.4	241.8	332052	100%	242
332053	-	2.1	11.4	-	-	13.4	402.0	326.4	37.2	289.2	332053	100%	289
332054	0.8	25.8	12.4	-	-	39.1	832.5	660.2	76.5	583.7	332054	100%	584
332055	1.1	18.2	-	-	-	19.3	305.1	235.6	27.9	207.7	332055	100%	208
332056	-	15.7	32.2	-	-	47.8	1,301.2	1,049.9	120.1	929.8	332056	100%	930
332057	-	4.8	16.2	1.9	-	22.9	691.2	562.1	64.0	498.1	332057	95%	473
332058	4.6	24.6	-	-	-	29.2	420.9	326.1	39.1	287.0	332058	85%	244
332059	-	-	29.4	-	-	29.4	951.2	776.0	88.1	687.9	332059	98%	674
332060	-	24.3	11.6	-	-	35.9	778.9	617.4	71.5	546.0	332060	96%	524
332061	-	11.3	-	13.1	-	24.5	782.1	642.5	73.3	569.2	332061	95%	541
332063	-	20.0	3.4	-	-	23.4	440.9	344.9	40.3	304.6	332063	85%	259
332084	-	4.8	2.8	-	-	7.4	167.2	133.0	15.4	117.7	332064	85%	100
332065	-	20.4	0.2	-	-	20.5	342.5	264.3	31.2	233.2	332065	95%	222
332086	-	7.1	17.3	9.0	-	33.3	1,083.3	887.2	100.9	786.3	332066	95%	747
332067	-	7.9	32.3	-	-	40.2	1,176.6	954.0	108.7	845.2	332067	90%	781
332068	-	8.7	28.6	-	-	37.3	1,070.6	868.9	98.9	768.0	332068	90%	691
332069	-	41.6	-	-	-	41.6	689.3	531.6	62.7	469.0	332069	100%	469
332070	-	0.7	-	30.6	-	31.3	1,398.5	1,170.1	132.2	1,037.9	332070	95%	986
332071	2.1	31.5	7.3	3.1	-	44.1	905.2	718.6	83.6	635.0	332071	100%	635
332072	-	11.9	35.7	42.4	-	90.0	3,271.4	2,701.2	306.4	2,394.8	332072	95%	2,275
332073	-	3.3	19.8	62.1	-	85.2	3,507.6	2,919.4	330.2	2,589.2	332073	100%	2,589
332074	-	16.3	24.3	-	-	40.5	1,054.7	848.3	97.2	751.1	332074	100%	751
332075	-	16.8	24.3	-	-	41.2	1,066.7	857.7	98.3	759.4	332075	92%	699
332076	0.8	14.0	8.5	-	-	23.3	509.8	405.7	47.0	358.8	332076	92%	330
333077	-	32.8	16.5	-	-	49.3	1,077.9	855.1	98.9	756.2	333077	98%	741
333078	-	20.1	17.1	-	-	37.2	887.7	709.3	81.6	627.7	333078	100%	628
333079	4.6	5.4	18.1	-	-	28.2	689.3	559.2	64.5	494.7	333079	98%	485
333081	-	66.2	1.8	7.7	-	75.6	1,500.7	1,182.8	137.8	1,045.0	333081	98%	1,024
333082	-	8.4	46.2	-	-	54.7	1,636.2	1,328.5	151.3	1,177.2	333082	90%	1,060
333083	-	-	73.0	0.1	-	73.1	2,365.7	1,929.9	219.1	1,710.8	333083	95%	1,625
333084	-	-	82.7	-	-	82.7	2,676.0	2,182.9	247.8	1,935.1	333084	95%	1,838
333085	1.7	23.1	-	49.4	-	74.2	2,624.4	2,172.3	247.1	1,925.2	333085	95%	1,829
333086	-	-	-	22.2	-	22.2	1,004.6	841.1	95.0	746.1	333086	100%	746
333087	-	7.1	-	-	-	7.1	117.6	90.7	10.7	80.0	333087	100%	80
333088	-	21.9	40.2	2.7	-	64.7	1,783.3	1,441.2	164.8	1,276.4	333088	95%	1,213
333089	-	-	0.2	12.7	-	12.9	580.5	485.9	54.9	431.0	333089	80%	345
333090	-	23.3	41.0	10.0	-	74.3	2,166.6	1,759.9	200.9	1,559.0	333090	80%	1,247
333093	-	56.2	-	-	-	56.2	932.1	718.9	84.8	634.1	333093	93%	590
Group331	0.4	36.1	8.3	-	-	44.8	868.2	681.7	79.5	602.2	Group331	25%	151
Group332	16.8	84.3	22.8	27.3	-	151.2	3,422.2	2,759.3	319.9	2,439.4	Group332	25%	610
Road r/w	45.4	28.8	24.7	16.8	-	115.6	2,165.1	1,770.0	209.0	1,561.0	Road r/w	100%	1,561
Subtotal:	**78.3**	**828.6**	**793.2**	**611.4**	**-**	**2,311.5**	**67,314.8**	**54,911.7**	**6,278.3**	**48,633.4**	**Subtotal:**	**89%**	**43,507**

VCU 84 Strata Average Bf Volumes/Acre

	VC-L	VC-4	VC-5	VC-6	VC-7	Percent
	2,301	12,234	21,146	34,036	52,579	85.7%
	-	1,957	2,511	5,845	7,178	14.3%
	2,301	14,191	23,657	39,881	59,757	76.3%
	2,636	19,711	32,019	49,629	73,291	100.0%

UNIT #	Estimated Acres by Volume Class					TOT AC	GROSS MBF	Net Sawlog Plus Utility MBF	Utility MBF	Net Sawlog MBF	VCU 84 UNIT #	Total Harvest Volume %	Net Recoverable Sawlog MBF
341094	-	22.3	-	9.4	-	31.7	904.4	689.9	98.4	591.5	341094	95%	562
341095	-	30.0	-	-	-	30.0	590.3	425.0	58.6	366.4	341095	100%	366
341097	-	12.0	-	12.0	-	23.9	828.6	646.2	93.2	552.9	341097	100%	553
341098	-	-	2.7	13.8	-	16.5	771.2	614.2	87.4	526.7	341098	100%	527
341099	-	4.4	-	18.0	-	22.5	982.1	781.9	114.1	667.9	341099	100%	668
341101	-	-	-	15.4	-	15.4	766.3	615.8	90.2	525.5	341101	75%	394
341102	-	25.2	22.8	-	-	48.0	1,226.0	896.4	106.5	789.9	341102	95%	750
341103	-	24.2	21.8	0.8	-	46.9	1,217.1	892.9	107.0	785.9	341103	100%	786
341104	0.4	40.5	29.6	-	-	70.6	1,748.4	1,276.8	153.7	1,123.2	341104	100%	1,123
341105	-	-	-	47.5	-	47.5	2,355.4	1,892.8	277.4	1,615.3	341105	80%	1,292
341107	-	5.4	11.1	100.2	11.6	128.2	6,280.6	5,025.0	706.9	4,318.1	341107	98%	4,232
341109	-	7.0	-	98.3	-	105.3	5,018.5	4,021.2	588.5	3,432.7	341109	97%	3,330
341110	-	10.2	21.1	-	-	31.2	875.1	642.8	72.8	570.0	341110	100%	570
341111	-	0.5	-	65.9	-	66.4	3,279.4	2,634.5	386.1	2,248.5	341111	98%	2,204
341112	-	-	-	20.6	14.0	34.7	2,051.9	1,660.9	221.3	1,439.7	341112	100%	1,440
341113	-	-	14.2	37.9	18.4	70.5	3,682.7	2,945.8	389.1	2,556.7	341113	100%	2,557
341114	-	9.2	31.9	12.0	-	53.1	1,797.1	1,362.9	168.1	1,194.8	341114	100%	1,195
341114S	-	-	2.5	18.8	7.8	29.0	1,577.6	1,269.3	171.4	1,097.9	341114S	100%	1,098
341115	-	4.1	42.1	0.3	-	46.6	1,445.2	1,067.3	115.6	951.6	341115	100%	952
341116	-	33.8	0.3	9.7	-	43.8	1,157.1	873.6	123.6	750.0	341116	95%	712
341118	-	2.4	-	34.0	1.9	38.3	1,873.4	1,503.2	217.0	1,286.1	341118	91%	1,170
Road r/w	5.9	21.2	5.6	19.2	5.7	57.6	1,983.8	1,553.5	208.7	1,344.8	Road r/w	100%	1,345
Subtotal:	6.3	252.3	205.7	533.8	59.3	1,057.4	42,412.4	33,291.9	4,555.8	28,736.1	Subtotal:	97%	27,825
21								78%	14%		20		

VCU 79 Strata Average Bf Volumes/Acre

	VC-L	VC-4	VC-5	VC-6	VC-7	Percent
	4,228	9,751	19,842	31,949	55,000	81.7%
	1,269	5,335	3,902	6,964		18.3%
	5,497	15,086	23,744	38,913	55,000	76.9%
	5,801	20,815	35,710	48,366		100.0%

UNIT #	Estimated Acres by Volume Class					TOT AC	GROSS MBF	Net Sawlog Plus Utility MBF	Utility MBF	Net Sawlog MBF	VCU 79 UNIT #	Total Harvest Volume %	Net Recoverable Sawlog MBF
398119	-	4.0	23.9	6.9	-	34.8	1,268.7	895.0	162.5	732.5	398119	97%	711
398120	-	-	1.6	30.5	-	32.1	1,533.0	1,225.5	218.8	1,006.8	398120	92%	926
398121	-	5.9	25.4	25.6	-	56.8	2,264.8	1,685.9	308.4	1,377.6	398121	88%	1,212
398122	6.5	-	12.5	38.0	-	57.0	2,321.4	1,810.7	321.6	1,489.1	398122	91%	1,355
398123	-	-	81.6	-	-	61.6	2,199.7	1,462.6	240.4	1,222.3	398123	91%	1,112
398124	-	12.9	38.1	9.4	-	60.4	2,083.1	1,464.6	282.8	1,181.8	398124	91%	1,075
398125	-	21.5	69.0	-	-	90.5	2,911.5	1,962.6	383.8	1,578.9	398125	91%	1,437
398126	-	-	-	87.6	-	87.6	4,236.9	3,408.8	610.0	2,798.7	398126	91%	2,547
398127	-	-	-	53.4	-	53.4	2,580.3	2,076.0	371.5	1,704.5	398127	85%	1,449
398127H	-	-	-	150.9	-	150.9	7,297.9	5,871.6	1,050.8	4,820.8	398127H	25%	1,205
398128	-	-	-	33.8	-	33.8	1,634.8	1,315.3	235.4	1,079.9	398128	91%	983
398129	-	3.5	-	21.1	-	24.6	1,094.2	874.5	165.8	708.6	398129	91%	645
398130	-	18.5	-	78.8	-	97.3	4,196.3	3,345.4	647.5	2,698.0	398130	35%	944
Road r/w	2.7	6.4	8.9	21.9	-	39.8	1,523.4	1,173.0	224.4	948.6	Road r/w	100%	949
Subtotal:	9.3	72.6	241.0	557.8	-	880.6	37,146.1	28,571.6	5,223.5	23,348.0	Subtotal:	71%	16,550

Unit Summary Cards with Map Facing Summary Description

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	860	UNIT #:	26102	MAP#	159	ACRES:	74
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	25			PHOTO #'S:	888-179
						ALTERNATIVE(S):	B, C, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	14.2	19%	MX-HC	420-430	50	M	P	-	L	M
VC-5	24.2	22.0	30%	HC	220	55	H	MP	-	M	M
VC-6	37.5	37.8	51%	WH-HC	140-220	60	H	MP		M	H
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		74.0	100%	-	-	57	H	MP		M	H

STAND CHARACTERISTICS

Mid elevation stand of medium to large sawtimber . Western hemlock series in a mosaic with western hemlock-yellow cedar series. An exception is the poorly drained bench in the upper third of the unit where small and medium sawtimber in the mixed conifer series predominates. Defect is moderate to high especially in the hemlock . Stand structure ranges from uneven-aged to functionally even-aged. Gaps have developed from windthrow and senescence. Advanced western hemlock regeneration occupies about 20% of growing space. Understory vegetation is primarily blueberry with devil's club common on the steeper slopes and more favorable microsites as evidenced by larger timber. Skunk cabbage is common on the flatter slopes with restricted drainage as in the mixed conifer series. Instability is evident along drainages in the steeper portions of the unit. Merchantable timber is all over 150 yrs old and over 2/3 of volume is greater than 350 yrs. Potential productivity is good except for fair in mixed conifer. Windthrow is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Heavy partial cut feasible; (2) Tailholds external to unit on west boundary, (3) Temporary road construction required.

Visual Resource Management: (1) VQO: Modification; VAC: High; (2) Some concern with background view from ferry route.

Soils / Geology: None

Fisheries / Watershed:

Wildlife: Possible travel corridor between drainages.

Cultural / Recreation / Subsistence: None.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of understocked stand with a decadent, mature overstory .
(2) Enhance timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Provide a programmed timber yield.
(6) Mitigate impact to unstable stream channels.
(7) Skyline yarding with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative because: (1) Provides a high volume yield from a defective stand with high potential and low current net productivity; (2) Reserve tree selection retains (a) large defective hemlock, and (b) yellow cedar and Sitka spruce of good phenotype for vertical structure and cavity nesting habitat, (c) seed sources for the higher valued timber species, and (d) visual softening of harvest impacts. (3) Logging system feasibility is good for a heavy partial cut. Clearcut and clearcut with reserves would provide a 5-10% higher timber yield but less regeneration of the higher valued and longer lived species without planting and would not ameliorate the impacts to visual or wildlife habitat resources as well as shelterwood with reserves. Selection and sanitation salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit boundary was determined by logging setting boundaries from a proposed road that terminates at the northern setting of the unit. The west unit boundary provides an uncut timber fringe that buffers the muskeg. To the north, the south setting of adjacent 321029 (Chatham area) has been dropped and provides a travel route between muskeg areas for wildlife.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Yarding Operations. Skyline yarding with one end suspension.
BMP 13.15: Wetland protection during timber harvest: buffering of muskeg.
BMP 18.1: Wildlife habitat improvement planning; provide travel corridor and retain wildlife trees.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and future blowdown of reserve trees.
(2) Retention of patches of advanced reproduction.
(3) If Year 3 stocking survey indicates < 100 well-distributed YC and SS per acre, interplant 150 SS and YC per acre Year 4 .
(3) Schedule precommercial thinning.

MONITORING PLAN

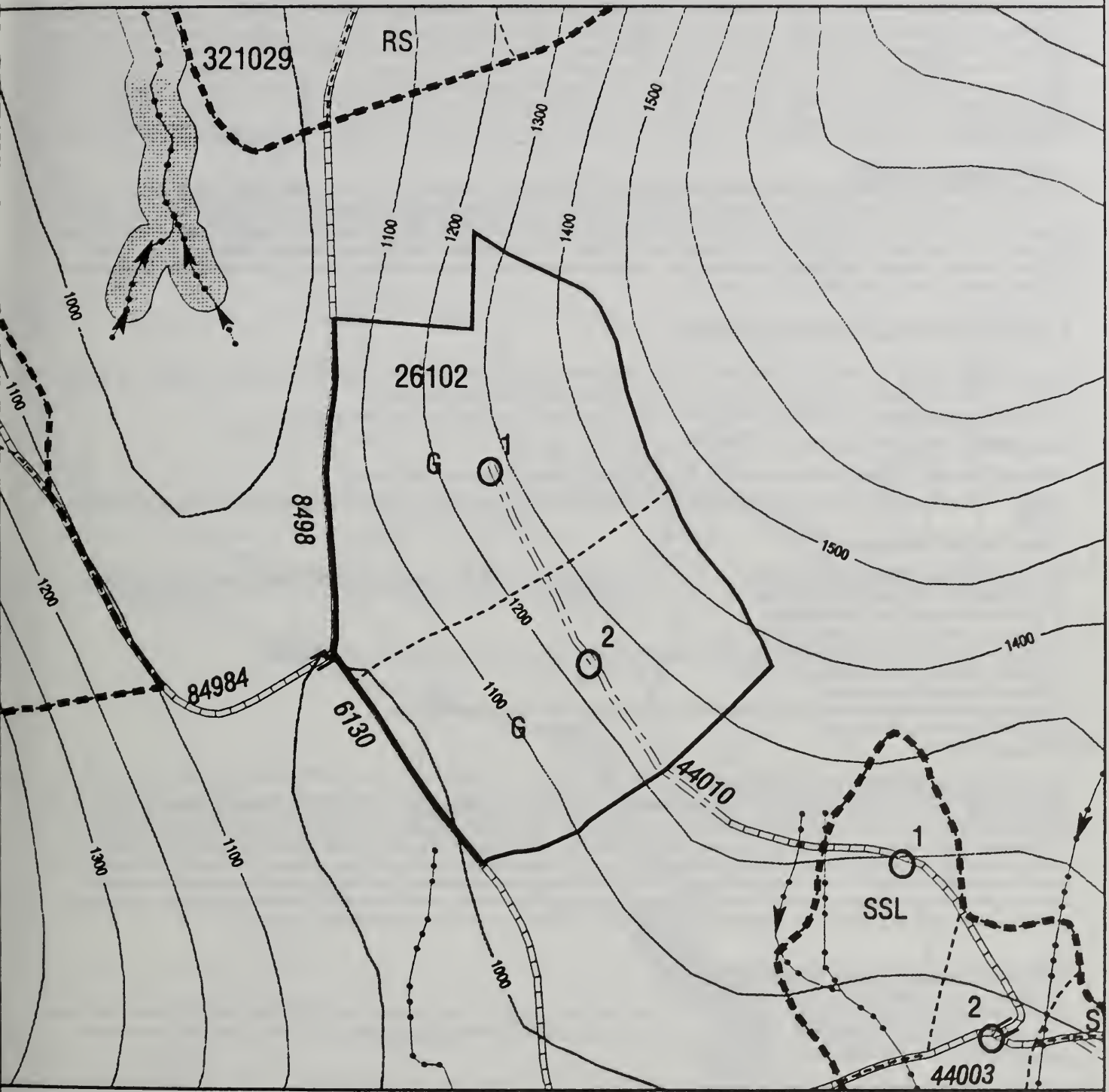
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 86 UNIT: 26102 ALTERNATIVE(S): B C E

ACRES: 73.93 TOTAL NET MBF: 1940.8 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 25 ROLL NO.: 888 PRINT NO.: 179



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 860 | UNIT #: 26103 | MAP# 164 | ACRES: 70
AERIAL PHOTO YEAR: 1989 | FLIGHT LINE: 25 | PHOTO #'S: 888-179
ALTERNATIVE(S): B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	37.2	53%	HC	220-210	45	M	MP	M	M	L
VC-5	24.2	31.0	44%	HC	210-220	55	M	MP	M	H	M
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	2.0	3%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		70.2	100%	-	-	48	M	MP	cedar decline	M	L

STAND CHARACTERISTICS

Mid to upper elevation stand of medium sawtimber with average defect and high YC mortality. Forest series is W hemlock-yellow cedar. Aspect is south to southwest. The stand is bisected by two Class 3 v-notches running north to south. Canopy closure is moderately dense with open patches of older, unmerchantable snags. Most snags are yellow cedar affected by cedar decline. YC snags intermixed with green timber tend to be salvageable. Between 20 % and 40% of the stand is stocked with advanced reproduction. Most advanced reproduction is WH but YC can be found throughout the stand. Understory species are blueberry, rusty menziesia, and skunk cabbage. Soil drainage is moderately poor. Most merchantable timber is over 250 yrs old and there is a partial understory of merchantable 50 to 120 yr old timber. Potential productivity is fair to moderate.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Heavy partial cut feasible; (2) Split yarding on Class 3 in west unit and yarding away from all muskegs is not feasible. (3) Complex anchors, tail trees, and tailholds external to unit are required, (4) Some side blocking, (5) Temporary road required.

Visual Resource Management: (1) VQO: Partial retention; VAC: High: (2) Some concern with background view from ferry route.

Soils / Geology: (1) Productivity and regeneration potential of muskegs and low site areas.

Fisheries / Watershed: (1) Split yarding recommended on Class 3 within unit to maintain downstream Class 2 habitat.

Wildlife: (1) Recommend retention of reserves and snags for vertical structure diversity and other wildlife habitat values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence:

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities)

(1) Regeneration of an decadent overmature stand.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield for downstream fisheries.
(6) Provide for yellow cedar regeneration.
(7) Design alternative silviculture systems to provide operational demonstrations of adaptive management trials.
(8) Provide a programmed timber yield.
(9) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative because: (1) Provides a high volume yield from a defective stand with high potential and low current net productivity; (2) Reserve tree selection provides large defective hemlock and yellow cedar and Sitka spruce of good phenotype for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, and visual softening of harvest impacts. (3) Logging systems feasibility is good for a heavy partial cut. (4) Clearcut and clearcut with reserves would provide a 5-20% higher timber yield but less regeneration of the higher valued and longer lived species without planting, and would not ameliorate the impacts to visual or wildlife habitat resources as well as shelterwood with reserves. Selection and sanitation salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

West boundary follows transition into low site and muskeg . The south east corner is located the upper extension of a Class 2 stream buffer that continues into a Class 3 in the unit that splits into 2 v-notch channels. Other unit boundaries are setting boundaries from the logging systems plan. Settings to the east, north east, and northwest are part of the helicopter sanitation salvage proposal.

Soil, Water, and Wildlife Conservation:

BMP 13.9 Yarding Operations: Skyline Yarding with One End Suspension
BMP 13.16 Stream Channel Protection: Split yarding on Class 3 v-notches

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and projected blowdown of reserve trees.
(2) Retention of patches of advanced reproduction.
(3) Plant YC and SS.

MONITORING PLAN

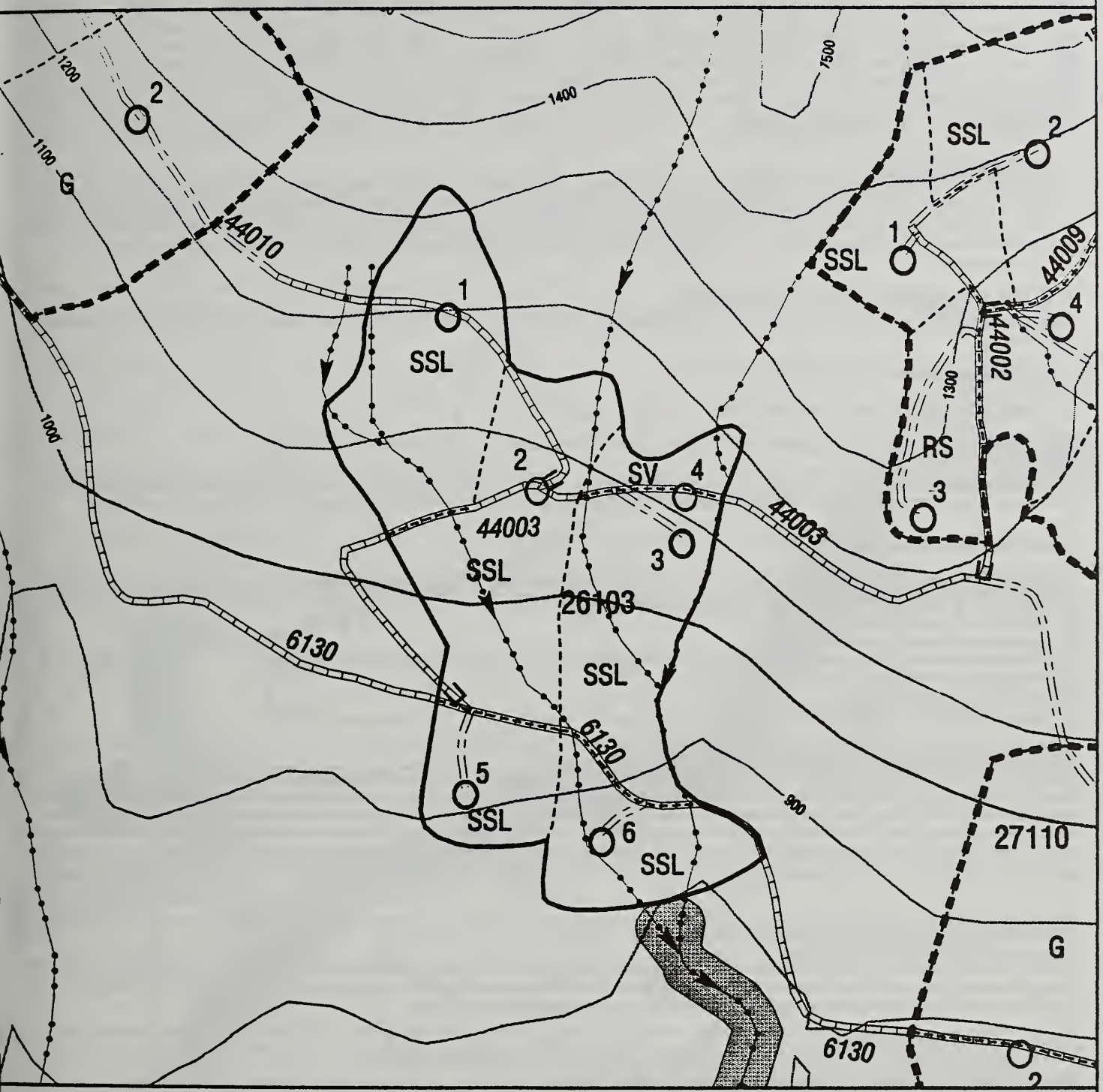
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 86 UNIT: 26103 ALTERNATIVE(S): B C D E

ACRES: 70.19 TOTAL NET MBF: 1169.3 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 25 ROLL NO.: 888 PRINT NO.: 179



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 870 | UNIT #: 27102 | MAP# 151 | ACRES: 58
AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 51 | PHOTO #'S: 684-153
ALTERNATIVE(S): B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	-	-	-	-	-	-	-	-	-	-
VC-5	24.2	1.2	2%	WH	110	55	M	M	M	M	L
VC-6	37.5	56.4	98%	S	310-320	70-spruce	M	M	H	M	L
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		57.6	100%	-	-	70	M	M	Wind	M	L

STAND CHARACTERISTICS

Mid elevation western hemlock and Sitka spruce series stand of large sawtimber. Snags are common with WH in decline and frost crack common in large spruce. Topography is gentle and soil is moderately well drained . The site is on a southwest aspect on a lower slope adjacent to a Class 2 fish bearing stream. Stand structure is two-storied with large timber with age estimated as at least 450 yrs intermixed with 120 to 200 yr old medium sawtimber. Advanced reproduction is not abundant. Shrub cover is open with species are scattered blueberry and locally dense patches of devil's club and skunk cabbage. Windthrow is a management concern. Potential productivity is good.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Shovel logging on east and west settings; (2) High lead logging remainder of unit. (3) Partial harvest is not feasible. (4) Two segments of temporary road.

Visual Resource Management: VQO: Modification; VAC: High

Soils / Geology: (1) Impact to hazard Class III and IV soils.

Fisheries / Watershed: (1) 100 ft TTRA buffer on Class II stream on south and east boundary. (2) Class III stream course within unit.

Wildlife: (1) Possible mountain goat habitat. (2) Sitka blacktailed deer use noted in unit. (3) Goshawk and marbled murrelet surveys had no response. (4) Recommend leaving green reserve trees and snags for vertical structure and other wildlife habitat values. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concern.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of overmature stand with a decadent overstory and a mature understory.
(2) Improve timber volume and value productivity.
(3) Avoid areas of high soil mass movement risk.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of merchantable timber species.
(6) Provide a programmed timber yield.
(7) Minimize sediment yield to fish bearing streams.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because: (1) Provides a high volume yield from a defective stand with high potential and low current net productivity; Logging systems feasibility is poor for partial cut with high likelihood of windthrow in a leave stand. . Shovel and high lead yarding would disturb the soil and seed bed condition favor Sitka spruce regeneration. Clearcut with reserves, shelterwood with reserves, or group selection would increase logging costs, decrease timber yield and productivity, result in less Sitka spruce regeneration without other mitigation, and would be subject to substantial blowdown. Planned blowdown to offset podsol formation is not indicated for this site. Overstory removal is also less feasible than the planned harvest system and would likely result in greater timber value loss and poorer distribution and performance of regeneration. Differ treatment would not regenerate or recover timber value from a overmature and decadent stand with high potential volume and value yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit boundary follows the TTRA buffer along the Class 2 streamcourse to the southwest and logical yarding limits elsewhere. Flood plain was deleted in location. All hazard class 3 and 4 soils were deleted from the unit . Unit location was shifted to the southwest to avoid unstable slopes and mt. goat habitat. Potential helicopter salvage in the cedar decline area is located on steeper ground to the north and on the south side of the Class 2 buffer.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designating Water Quality Protection Needs - Class 2 buffer and Class 3 stream designated for protection.
BMP13.5 Protection of Potentially Unstable Areas - Deleted Class 3 and 4 soil areas.
BMP 13.7 Shovel Logging.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Scarification to encourage spruce[and alder regeneration.
(3) Schedule PCT . Favor Sitka spruce.
(4) Monitor salmonberry and alder competition with regeneration.

MONITORING PLAN

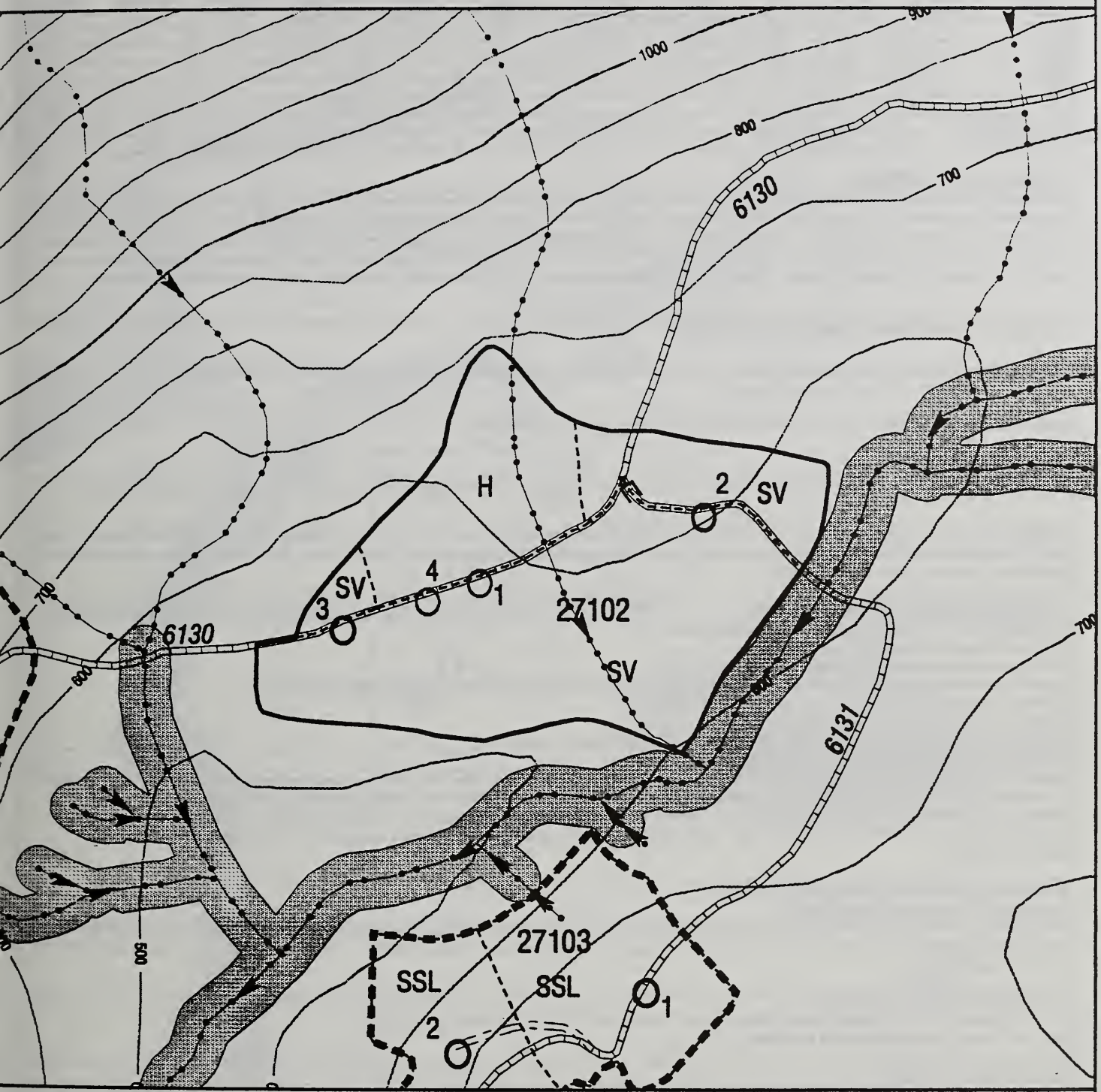
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT: 27102 ALTERNATIVE(S): B C D E

ACRES: 57.53 TOTAL NET MBF: 1932.2 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 153



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	870	UNIT #:	27103	MAP#	158	ACRES:	35
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	684-153
						ALTERNATIVE(S):	D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	13.2	38%	HC	210-220	45	H	MP	M	H	L
VC-5	24.2	-	-	-	-	-	-	-	-	-	-
VC-6	37.5	22.0	63%	WH-HC	120-130	60	H	M	H	H	L
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		35.2	100%	-	-	54	H	M	windthrow	H	L

STAND CHARACTERISTICS

Mid elevation stand of medium to large sawtimber in the western hemlock and western hemlock-yellow cedar series. Stand structure in the VC 6 is two-storied to uneven-aged as there is a layering of age classes from historic blowdown. The VC 4 if functionally evenaged with less blowdown and poorer quality and older understory. Most overstory trees are greater than 300 yrs old . Dead and flat tops are common. The understory is various age classes up to 150 yrs old and most is WH. Soil drainage is moderately well in the VC 6 and moderately poor in the VC 4. Aspect is northwest and topography is moderate. Several Class 3 streams extend partially through the unit and a Class 1 stream is immediately northwest. Windthrow is a management concern. Potential productivity is moderate to high. Regeneration potential is high.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Small slackline proposed. (2) Skyline extensions through buffers and tail trees may be required. (3) Partial cut is not feasible and snag retention a safety hazard. (4) Temporary road required.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Not seen from ferry routes.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) 100 ft TTRA buffer on Class II stream. (2) Potential sediment yield from Class III stream courses in unit . (3) Blowdown in stream buffer.

Wildlife: (1) Evidence of mountain goat use in area. (2) Recommend leaving green reserve trees and snags for vertical habitat structure and other wildlife values. Some opportunities will be used in this unit to retain vertical structure. Avoid disturbance to nesting goshawks knownn to be in vicinity. Prior to harvest, search for nest to ensure that goshawk guideines in effect are implemented.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain channel stability.
(6) Provide a programmed timber yield.
(7) Skyline extensions may be required through stream buffers on north and west boundaries.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because : (1) Produces the highest volume and value yield from a stand with low current and moderate to high potential productivity; (2) Visual impact is not apparent; and (3) logging system feasibility is poor for a partial cut. Clearcut with reserves or shelterwood with reserves would be less economical and produce lower current and potential yields. Planned windthrow to impede podsol formation is not indicated for this unit. Overstory removal or group selection would be feasible if harvest was by helicopter. Defer treatment would not provide a timber yield for a relatively low impact unit with moderate to high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundary to northwest is the TTRA buffer. Unit was modified from paper plan to coincide with occurrence of merchantable timber. Low site timberland was eliminated from the unit during field layout. There is a proposed helicopter salvage area to the immediate northeast. Adjustment of boundary to the low site transition area will reduce windthrow susceptibility.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designating Water Quality Protection Needs - Class 1 buffer; Class 3 streams designated for protection.
BMP 13.9 Skyline Yarding with One End Suspension

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Schedule PCT; favor Sitka spruce and yellow cedar.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT: 27103 ALTERNATIVE(S): D

ACRES: 35.17 TOTAL NET MBF: 913.9 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 26 ROLL NO.: 888 PRINT NO.: 168



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	870	UNIT #:	27105	MAP#	153	ACRES:	43
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	26			PHOTO #'S:	888-169
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	-	-	-	-	-	-	-	-	-	-
VC-5	24.2	43.0	100%	WH-HC	120-130	55	M	M	M	H	M
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		43.0	100%	-	-	55	M	M	windthrow	H	M

STAND CHARACTERISTICS

Mid to upper elevation stand of medium to large sawtimber in the western hemlock and western hemlock-yellow cedar series. Mortality and windthrow gaps occur throughout the stand. Most overstory is greater than 280 yrs old. Understory and advanced reproduction occupy less than 20% of growing space. Stand structure is functionally even-aged. Understory is moderate to heavy blueberry with devil's club, rusty menzesii, shield fern, and skunk cabbage. Soil drainage is moderate. Topography is moderate and unbroken except for a series of small v-notches bisecting the unit from the northwest to southeast. Potential productivity is moderate and regeneration potential is good. Windthrow is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Slackline with 90 ft tower proposed; (2) Partial cut not feasible.; (3) Snag retention a safety hazard. (4) Tailtrees may be required.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Background 8.5 mi view from ferry route.

Soils / Geology: (1) Exclude hazard Class 4 soils and low productivity soils from timber harvest.

Fisheries / Watershed: (1) 100 ft TTRA Class II buffer required. (2) Recommend delete south end of unit for possible sediment yield to nearby excellent fish habitat. (3) Minimize sediment yield from Class 3 streams. This was done.

Wildlife: (1) No response to goshawk and marbled murrelet surveys. (2) Recommend leaving green tree retention and snags for vertical habitat structure and other wildlife values. Some opportunities will be used in this unit to retain vertical structures.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of a decadent overmature stand.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut was selected over clearcut with reserves, shelterwood with reserves, or group selection because partial cut harvest feasibility is poor and windthrow potential of leave trees is high. Clearcut is the optimum system for timber productivity and harvest economics. Defer treatment would not provide a timber yield; would not regenerate a unit of moderate visual, watershed, and wildlife resource impact and high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

South and east boundaries follow stream course buffers . The northeast boundary was modified to exclude the potentially unstable v-notch. The northwest boundary follows the transition into oversteepened hazard class 4 soils. The Low site are in the southwest corner of the unit was also excluded . Proposed helicopter salvage areas are located to the northwest and southeast of the unit.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designating Water Quality Protection Needs - Buffer Class 2 streams and designate Class 3 streams for protection.
BMP 13.9 Skyline Yarding with One End Suspension
BMP 13.5 Protection of Potentially Unstable Areas - Exclude hazard class 4 soils.

Forest Productivity Activities:

(1) Soil warming and mixing from logging disturbance.
(2) Plant YC to maintain merchantable species diversity.
(3) Schedule PCT. Favor YC and SS.

MONITORING PLAN

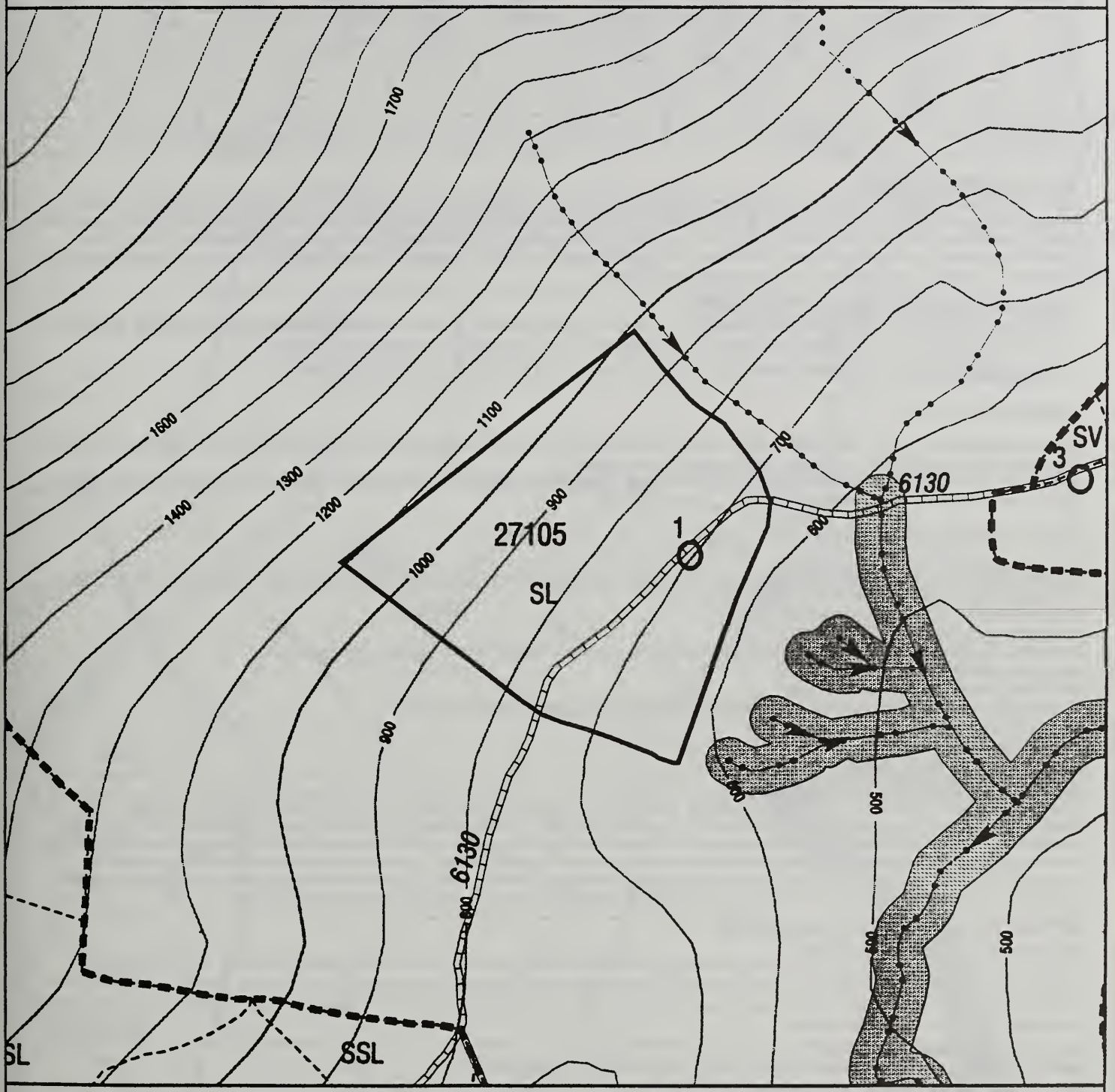
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT: 27105 ALTERNATIVE(S): B C D E

ACRES: 43.02 TOTAL NET MBF: 939.2 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 26 ROLL NO.: 888 PRINT NO.: 169



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	870	UNIT #:	27107	MAP#	160	ACRES:	120
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	26			PHOTO #'S:	888-168
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	29.5	25%	HC	220-230	50	M	MP	L	M	L
VC-5	24.2	90.3	75%	HC	220-230	55	M	MP	L	M	L
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		119.8	100%	-	-	54	M	MP	cedar decline	M	L

STAND CHARACTERISTICS

Mid to upper elevation stand of medium and large sawtimber in the western hemlock-yellow cedar series with low site inclusions of mixed conifer. Defect and mortality is average except for some cedar decline is evident in pockets of poorly drained soils. Stand structure is uneven-aged to two-storied with up to 40% of the stand stocked with advanced reproduction. Overstory age is greater than 300 yrs with a merchantable understory 150 to 250 yrs old. Aspect is predominantly southeast. Several Class 3 streams are present with a v-notch channel splitting the lower unit from the northwest to southeast. Soil drainage is moderately poor. Regeneration potential and potential productivity are moderate. Windthrow risk is a moderate management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Small and large slackline yarders required. (2) Skyline extensions through stream buffers. (3) Helicopter harvest option would allow sanitation salvage Rx; (4) Heavy partial harvest feasible with skyline in portions of unit. (5) Temporary road required within the unit.

Visual Resource Management: (1) VQO: Modification; VAC: High; (2) Sensitive visuals from 8 mi background from ferry route.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) 100 ft TTRA buffer required on Class 2 at bottom of unit. (2) Recommend split yarding on v-notch Class 3 channel in unit. Retain 50 percent of the shade producing vegetation on the SE, S, SW and W banks of Class III streams.

Wildlife: (1) Suitable Canadian goose and red breasted sapsucker habitat. (2) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Reduce sediment yield to fish bearing streams.
(6) Maintain diversity of commercial tree species.
(7) Design alternative silviculture systems to provide operational demonstrations of adaptive management trials.
(8) Provide a programmed timber yield.
(9) Skyline extension through stream buffer.
(10) Skyline yarding with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut and clearcut with reserves are the selected alternatives. Planned reserves are a no cut buffer on the v-notch and reserve tree retention in settings 1 and 5. Sanitation salvage would be the selected alternative if the unit is harvested by helicopter. Sanitation salvage would conserve advanced reproduction and thrifty mature timber with less impact to watershed, wildlife habitat, and visuals. Temporary roads would not be constructed. Timber productivity from blowdown after sanitation salvage and reduced regeneration and performance of advanced and new regeneration favor stand regeneration. Clearcut and clearcut with reserves maximizes harvest economics, timber yield, timber productivity, and YC and SS regeneration. . Watershed, wildlife, and visual impacts from clearcutting would be mitigated as described. Defer treatment would not provide a timber yield and would not regenerate (or sanitize) a decadent stand with moderate watershed impact.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Upper stand boundary located at yarding limits for downhill slackline. Northeast and southwest boundary located at logical setting boundaries. East boundary follows transition into low site and muskeg. Southeast boundary follows a Class 2 buffer and exclude sensitive watershed and low site timberland. Setting 5 was added to offset areas excluded from paper plan. West boundary is located to leave a future setting between units 27107 and 27108. Adjacent stands to the north, northeast, east, and south are included in the proposed helicopter salvage.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 buffer; split yard and buffer v-notch
BMP 13.9 Suspended Log Yarding
BMP 13.16: Stream channel protection--split yard; V-notches.

Forest Productivity Activities:

(1) Soil warming and mixing from logging disturbance.
(2) Plant YC and SS on portions of the unit.
(3) Release existing advanced reproduction.
(4) Schedule PCT. Favor YC and SS.

MONITORING PLAN

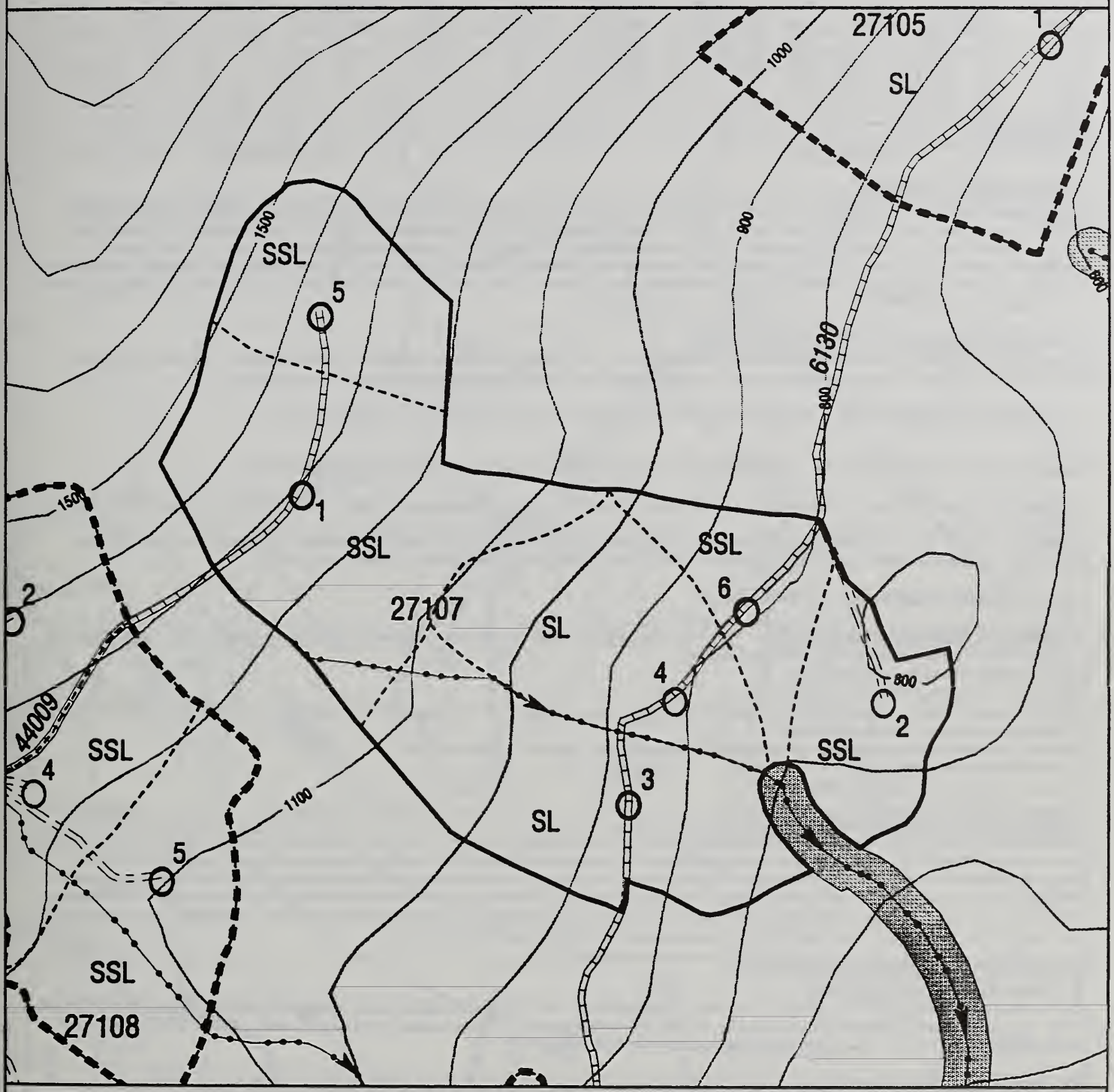
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT: 27107 ALTERNATIVE(S): B C D E

ACRES: 119.83 TOTAL NET MBF: 2353.2 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 26 ROLL NO.: 888 PRINT NO.: 168



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	870	UNIT #:	27108	MAP#	163	ACRES:	73
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-135
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	44.1	60%	XC-HC	420-210	50	M	MP	L	M	L
VC-5	24.2	28.7	39%	HC	220-210	55	M	M	-	H	L
VC-6	37.5	0.5	1%	HC	220-210	65	M	M		H	L
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		73.3	100%	-	-	52	M	MP	cedar decline	M	L

STAND CHARACTERISTICS

Upper elevation stand of medium and large sawtimber that is a mosaic of westem hemlock, westem hemlock-yellow cedar, and mixed conifer forest series. Defect is average to high. Cedar decline and defect is pronounced is south east portion of the stand and in surrounding stands. Stand structure is a mosaic of functionally even-aged (in the northem unit to two-storied to unevenaged in VC 4 areas most impacted by cedar decline. Most snags in the areas of heavy cedar decline are not salvageable. Overstory age exceeds 350 yrs with merchantable understory timber most in the 180 to 220 yr age class. Aspect is predominantly southeast and topography is gentle to moderate. Soil drainage is moderate to poor. Regeneration potential is high except for only fair in mixed conifer areas of cedar decline. Potential productivity is high to fair following the same pattem as soil drainage and regeneration potential.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Small slackline and running skyline proposed. (2) Heavy partial harvest is feasible. (3) Sanitation salvage Rx is feasible if helicopter harvest system. (4) Tailtrees, skyline extensions outside of unit, and complex guyline anchors required. (5) temporary spur roads required.

Visual Resource Management: (1) VQO: Modification; VAC: High (2) Visually sensitive as 8 mile background view from ferry route.

Soils / Geology: (1) Exclude low productivity timberland. (2) Advanced podsol formation is believed to be associated with cedar decline.

Fisheries / Watershed: (1) Potential sediment yield from Class 3 stream. Retain 50 percent of the shade producing vegetation on the SE, S, SW and W banks of Class III streams.

Wildlife: (1) Suitable habitat for Canadian goose and red breasted sapsucker. (2) Red tail hawk present in unit during stand exam. (3) Recommend retention of green reserve trees and snags for vertical habitat structure and other wildlife values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concems.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of a overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Reduce sediment yield to fish bearing streams.
(5) Design altemative silviculture systems to provide operational demonstrations of adaptive management trials.
(6) Provide a programmed timber yield.
(7) Skyline yarding with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected Rx. Planned reserves are a no-cut buffer island on a portion of the Class 3 stream and reserve tree retention below the road in setting 2 and all of settings 3, 4, and 5 . Shelterwood with reserves would conserve advanced reproduction and have less impact to visuals, wildlife, and watershed. Blowdown subsequent to harvest in areas of cedar decline may forestall podsol formation believed associated with the cedar decline. Clearcut and clearcut with reserves would result in more harvested volume and be more efficient to harvest, but would not meet wildlife and visual objectives as well. Group selection and sanitation-salvage have poorer harvest economics, are less feasible operationally, and would not provide a regenerated stand with the desired structural characteristics. Defer treatment would not provide a timber yield and would not regenerate (and/or sanitize) a decadent stand with low watershed impact.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundary to the northwest is a v-notch and to north is future setting boundary. The north east boundary is located to leave a future setting between units 27108 and 27107. The east and south boundaries follow the transition into low productivity timberland. The unit boundary to the west is based upon future setting boundaries. Stands to the west, southeast, and south are included in the proposed helicopter salvage.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 3 stream

Forest Productivity Activities:

(1) Soil warming and mixing from logging disturbance.
(2) Windthrow of reserve trees or sanitation salvage residual to counter podsol formation.
(3) Plant 150 YC per acre in settings 1 and 3 if all skyline; setting 1 alone if skyline and clearcut.
(4) Schedule PCT post harvest if sanitation salvage and at +/- age 20 for regeneration Rx's.

MONITORING PLAN

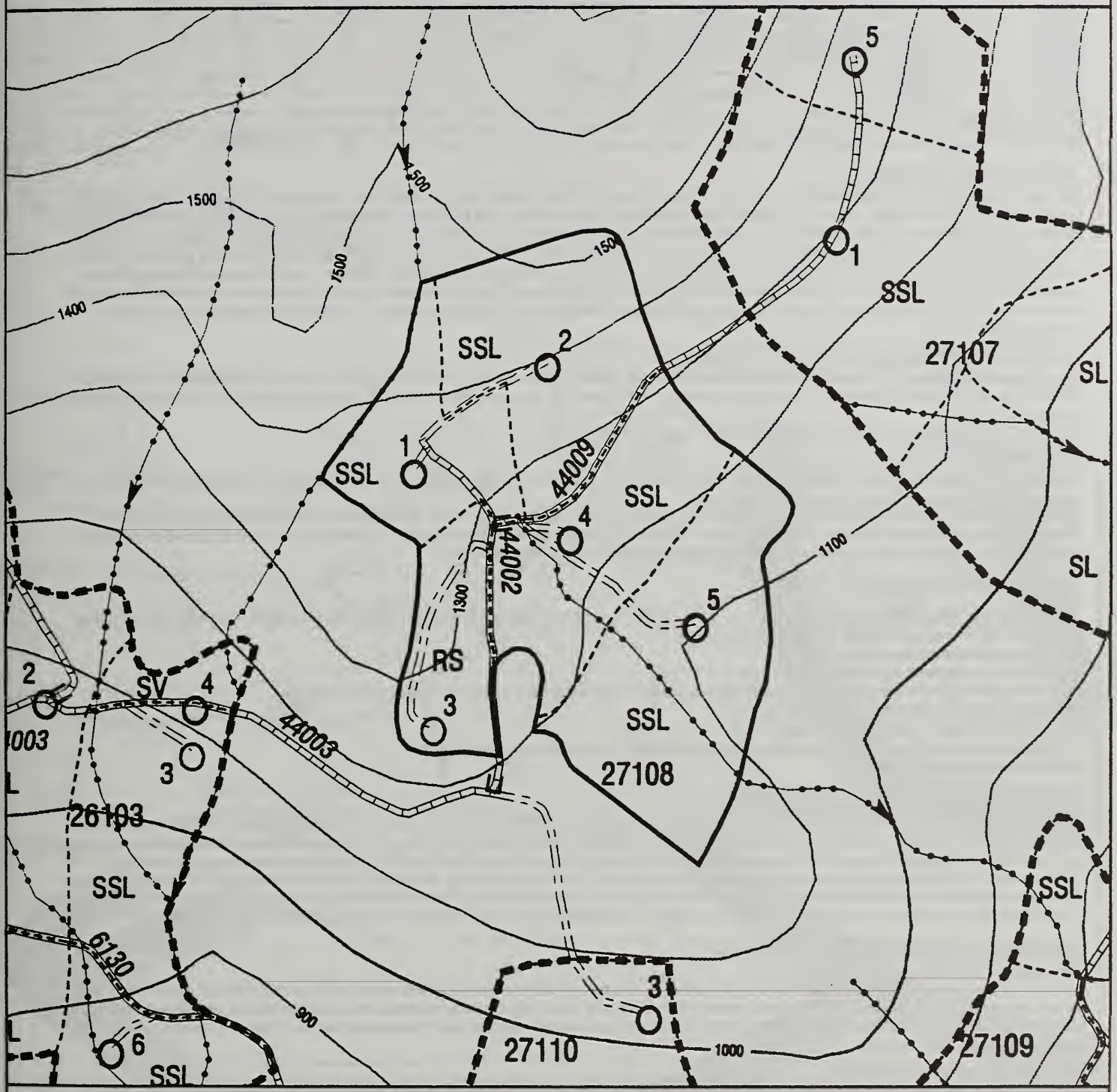
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT: 27108 ALTERNATIVE(S): B C D E

ACRES: 73.2 TOTAL NET MBF: 1210.7 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 135



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	870	UNIT #:	27109	MAP#	169	ACRES:	66
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	26			PHOTO #'S:	888-168
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	7.7	12%	XC-HC	420-220	50	L	P	M	M	L
VC-5	24.2	58.0	88%	HC-WH	230-210	55	M	M	M	H	L
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**65.7**	**100%**	-	-	**54**	**M**	**M**	**m'toe/decline**	**H**	**L**

STAND CHARACTERISTICS

Mid elevation stand of small to large sawtimber that is predominantly western hemlock-yellow cedar in a mosaic with lesser amounts of western hemlock and mixed conifer series. Defect is average. There is high quality large yellow cedar in the central unit and some cedar decline in the lower unit where slope flattens and soil drainage is poor. Stand structure is functionally even-aged. Overstory age is greater than 300 yrs and there is an understory of younger overmature merchantable timber. There is fair western hemlock advanced regeneration but little cedar regeneration. WH mistletoe infection is present. Soil is moderately well drained in the VC 5 and poorly drained in the VC 4. Two v-notch Class 3 streams bisect the unit from the northwest to the southeast. The Class 3 stream forming the east boundary is unstable and Class 1 and 2 fish bearing streams are immediately down slope. Aspect is predominantly southeast and slopes are moderate . Potential productivity and regeneration potential is moderate to high except in areas of poor drainage. Windthrow is a management concern. Cedar decline is present to pronounced in surrounding stands.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Heavy partial harvest is feasible but snag retention a safety hazard. (2) Split yarding or full suspension is feasible on v-notch streams. (3) About 500 ft of temporary road required to access two landings. (4) 90 ft and 70 ft tower slacklines required. (5) Skyline extensions through Class II buffer may be necessary.

Visual Resource Management: (1) VQO: Modification ; VAC: High. (2) Sensitive background view is 8 mi from ferry route.

Soils / Geology: No concern.

Fisheries / Watershed: (1) Class 2 stream forming east unit boundary has unstable channel banks. (2) Recommend split yarding or full suspension over Class 3 v-notches in unit. (3) Excellent Class 2 fish habitat below unit.

Wildlife: (1) Suitable Canadian goose and red breasted sapsucker habitat. (2) Red tail hawk in unit, but no nest was found. (3) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Clearcut with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concern.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Maintain diversity of commercial timber species.
(7) Design alternative silviculture systems to provide operational demonstrations of adaptive management trials.
(8) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative. The reserves are no-cut buffers as specified below on the Class 3 streams within the unit. Sanitation salvage by helicopter would be the selected alternative if the Alternative D - Scenic Helishow is the project alternative. Clearcut with reserves as planned is three clearcuts spaced by stream buffers. This alternative is the most economical harvest method and provides the highest timber yield of all options save clearcut without leave buffers. The buffers are expected to provide yellow cedar and Sitka spruce seed with better distribution than clearcut. Watershed , visual, and wildlife impact would be less than the clearcut but more than the sanitation salvage. Group selection would fragment the unit extensively and not meet other objectives as well. Blowdown is expected to occur in the buffers and would also be significant in the sanitation salvage Rx. Defer treatment would not regenerate or sanitize a decadent stand nor provide a timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The east boundary follows a 100 ft TTRA buffer on a Class 3 stream. The paper plan unit extended across this stream but this portion of the unit was deleted when the stream was found to be fish bearing. The unit extends between the two bisecting Class 3 streams to the southeast until a transition into low productivity timberland. The west and northwest boundaries follow setting breaks for future harvest. The unit is located amid an area of heavy cedar decline. Proposed helicopter salvage are located to the west, south, and north.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Designate Water Quality Protection Needs - 100 ft Class 2 buffer; split yard and buffers as described for Class 3 streams within unit.
BMP 13.19: Reforestation requirement--scarify soils and YC planting.
BMP 18.1: Snag retention for reduced wildlife habitat impact.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Yellow cedar planting.
(3) Schedule PCT. Favor YC and SS.

MONITORING PLAN

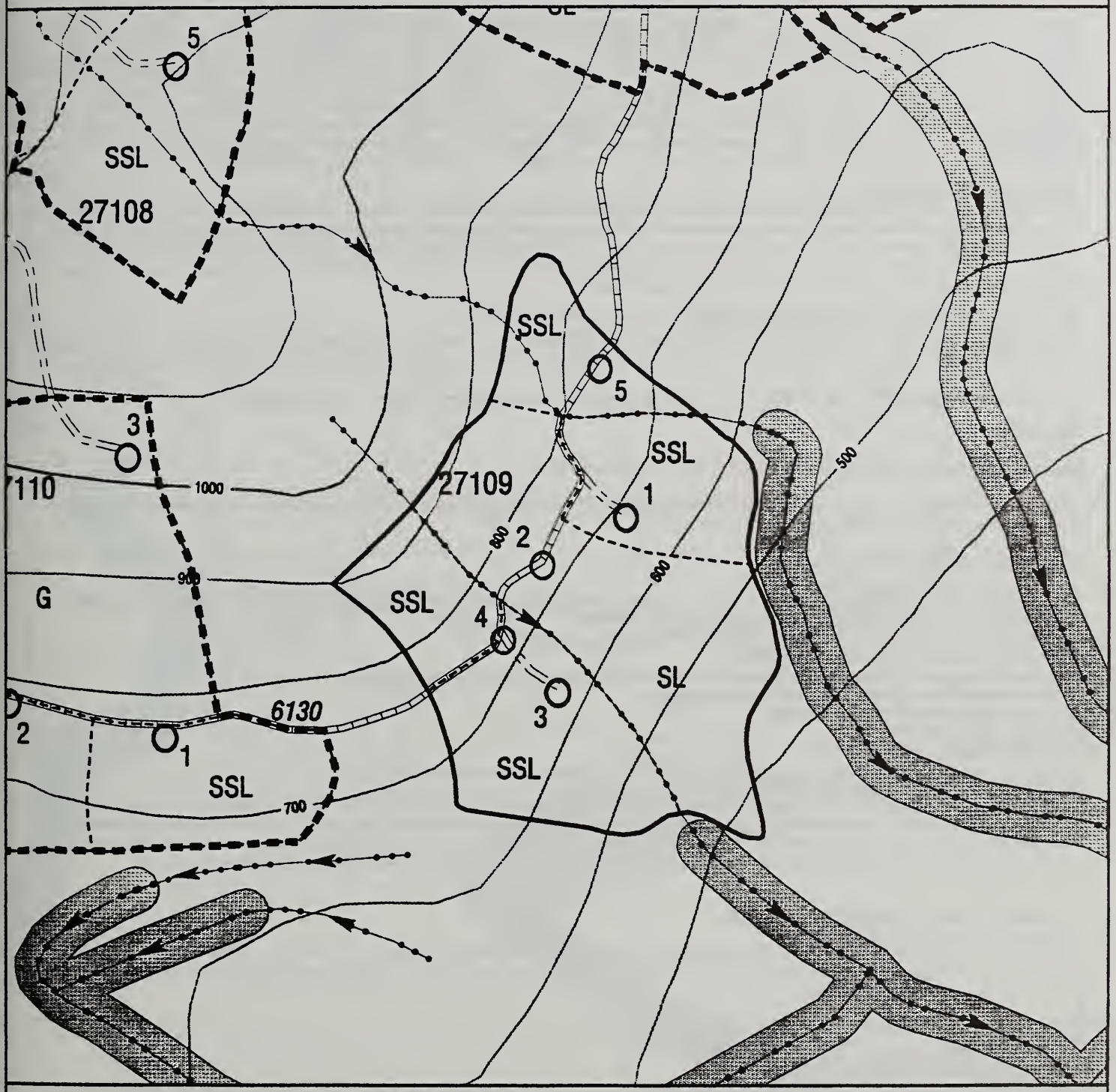
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT: 27109 ALTERNATIVE(S): B C D E

ACRES: 65.66 TOTAL NET MBF: 1365 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 26 ROLL NO.: 888 PRINT NO.: 168



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	870	UNIT #:	27110	MAP#	170	ACRES:	55
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	26			PHOTO #'S:	888-167
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	54.7	99%	HC	220-210	50	M	MP	H	M	L
VC-5	24.2	-	-	-	-	-	-	-	-	-	-
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	0.6	0.01	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		55.3	100%	-	-	49	M	MP	cedar decline	M	L

STAND CHARACTERISTICS

Mid to upper elevation stand of W. hemlock-yellow cedar series with small spruce component. Volume class 4, composed of medium sawtimber with average to high defect and very high mortality. Stand structure is functionally even-aged with overstory age 250 years. South-facing slopes are moderately steep with moderately poorly drained soils. Understory is light blueberry cover with skunk cabbage common. Advanced conifer regeneration is sparse. Regeneration potential is moderate. The unit and surrounding areas are affected by cedar decline. Upper stand is in relatively good condition and cedar decline increase towards the stand bottom except a 15 acre patch of 120 yr old timber. Regeneration potential is moderate and potential productivity is fair.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Small slackline and gravity return upper 3 settings, helicopter lower setting. (1) Tiebacks required at all three landings. (3) Temporary road to landing 3. (4) Tail trees, sideblocking, and skyline extensions required. (4) Heavy partial harvest feasible cable settings, helicopter harvest allows light partial harvest.

Visual Resource Management: (1) VQO: Modification, VAC: High. (2) Viewed 8 mi in background from ferry route. (3) Visually sensitive.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) Class 2 stream course south of stand with cutthroat trout habitat.

Wildlife: (1) Suitable habitat for Canadian goose and red breasted sapsucker. (2) Recommend green reserve trees for vertical structure and other wildlife habitat values. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence:

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of overmature stand with decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Design altemative silviculture systems to manage yellow cedar.
(6) Reduce sediment yield to fish bearing streams.
(7) Provide a programmed timber yield.
(8) Skyline yarding with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

A combinaton of clearcut with reserves and shelterwood with reserves (lower setting) are the silvicultural methods that provide the most efficient timber harvest and subsequent timber productivity. Clearcutting the entire stand would not mitigate visual impact nor provide wildlife habitat values of clearcut with reserves and shelterwood with reserves. Group selection and sanitation-salvage would be less efficient, result in lower future productivity, and not meet the desired structural characteristics for the new stand. Defer would not replace a declining stand with vigorous timber nor recover value and release advanced regeneration in the cedar decline area.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

North, west, and east boundaries were located as feasible logging setting boundaries. The south boundary follows a 100 ft TTRA Class 2 buffer. This area was dropped from the paper plan design when field review indicated that the two streams were Class 2 rather than Class 3. The unit is surrounded on all sides except part of the south boundary with the proposed Stikine sanitation salvage project.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 TTRA buffer.
BMP 13.9 Suspended Log Yarding

Forest Productivity Activities:

(1) Soil warming and mixing from logging disturbance and blowdown of reserve trees.
(2) YC and SS planting to improve value and volume productivity.
(3) Schedule PCT and favor SS and YC.

MONITORING PLAN

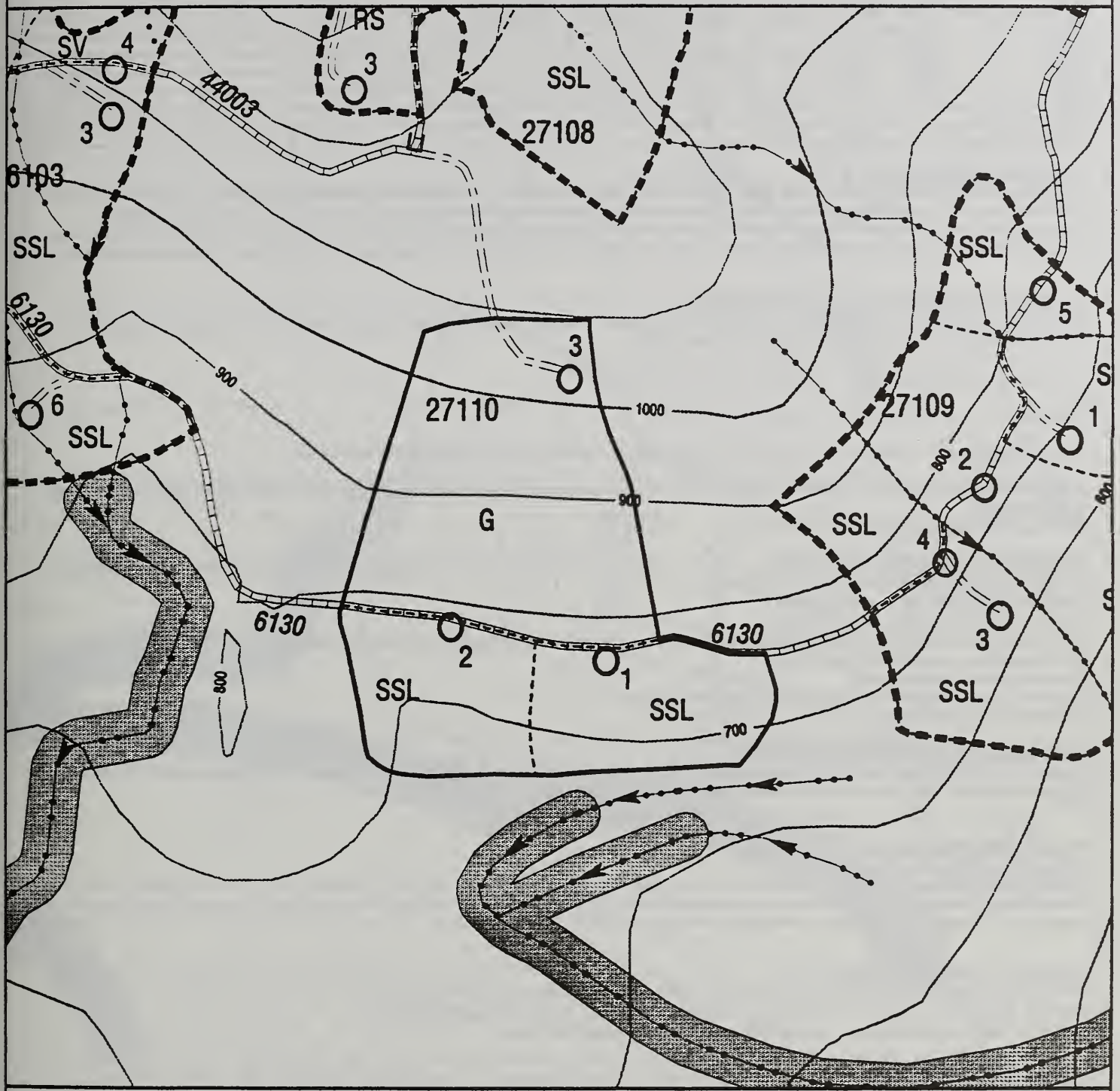
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT: 27110 ALTERNATIVE(S): B C D E

ACRES: 55.4 TOTAL NET MBF: 711 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 26 ROLL NO.: 888 PRINT NO.: 167



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	870	UNIT #:	27113	MAP#	164	ACRES:	54
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	27			PHOTO #'S:	888-153
						ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	10.2	19%	HC-WH	220-130	50	M	MP	-	M	L
VC-5	24.2	-	-	-	-	-	-	-	-	-	-
VC-6	37.5	42.4	79%	HC-WH	210-110	65	M	M	-	H	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	1.3	2%	HC-XC	220-420	45	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		53.9	100%	-	-	61	M	M	-	H	M

STAND CHARACTERISTICS

Upper elevation stand of W. hemlock-yellow cedar and W. hemlock series. Volume classes 4 & 6, composed of large sawtimber with low defect and high mortality; a small area of low-site volume was also included within the unit. Stand structure is functionally even-aged with overstory age 300+ years. South to west facing slopes are moderately steep with a single class 3 stream in the northern portion of the unit; soil drainage is moderate to moderately poor. Understory is blueberry with skunk cabbage and occasional devils club and shield fern. Advanced conifer reproduction is sparse; regeneration potential is high except on low site areas. Potential productivity is high.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Large slackline 90 ft tower and 1 3/8 in skyline. (2) Partial harvest not feasible because of sidehill yarding. (3) Tailtrees required. (4) Skyline extension outside unit and rigging through stream buffer required.

Visual Resource Management: (1) VQO: Modification, VAC: High. (2) Not seen.

Soils / Geology: (1) Exclude low productivity forest soil from harvest.

Fisheries / Watershed: (1) Class 2 TTRA buffers required. (2) Full suspension recommended over Class 3 in north portion of unit.

Wildlife: (1) Recommend leaving green reserve trees and snags for vertical structure and other wildlife habitat values. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities)

(1) Regeneration of an overmature stand with a poor understory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of commercial timber species.
(6) Provide a programmed timber yield.
(7) Tail trees, skyline extensions, and rigging through stream buffer required.
(8) Skyline with one-end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because it is the most optimum for harvest operations and timber productivity. Partial harvest is not a feasible option due to terrain and operational limitations. Defer would not replace a slow growing and decadent stand with a rapid growing young stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The west and south boundaries border low productivity / low volume areas. The eastern portion of the south boundary borders a 100 ft TTRA Class 2 stream buffer. The northwest corner of the unit was deleted to exclude low productivity forest land. The north boundary also generally follows the transition into low-site. The east boundary was located to retain a future unit and timbered habitat between units 27113 and 29113

Soil, Water, and Wildlife Conservation:

BMP 13.3: Designate Water Quality Protection Needs - Class 2 TTRA buffer, Class 3 stream in unit with full suspension.
BMP 13.9: Suspended Log Yarding - Full suspension on class 3 in northwest unit, elsewhere one end suspension.
BMP 13.16: Stream Channel Protection- directional felling and stream cleanout in Class 3 in unit.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Planting YC and SS to maintain species mix and improve value and volume productivity.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT: 27113 ALTERNATIVE(S): B D E

ACRES: 53.93 TOTAL NET MBF: 1575.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 27 ROLL NO.: 888 PRINT NO.: 153



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29101	MAP:	125	ACRES:	15
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-181
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	-	-	-	-	-	-	-	-	-	-
VC-5	24.2	6.1	41%	WH	130-110	55	H	MP	M	M	M
VC-6	37.5	8.8	59%	WH	110-130	65	H	MP	H	H	H
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		14.9	100%	-	-	61	H	MP	windthrow	H	H

STAND CHARACTERISTICS

Lower to mid elevation stand of W. hemlock series. Volume class 5 & 6, composed of large sawtimber with average defect and high mortality. Stand structure is a mosaic of uneven and 2-storied, with overstory age 350-400 years, and snags distributed throughout. East-facing slopes are moderately steep with soil drainage moderately poor. Understory is blueberry with common skunk cabbage and some devils club. Advanced conifer regeneration is common, but of poor quality and vigor. Regeneration potential is moderate to high and potential productivity is high. Windthrow is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Running skyline with 7/8 in lines. (2) Downhill yarding. (3) Tail trees required. (4) Partial cut not feasible. (5) Directional cutting along buffer.

Visual Resource Management: (1) VQO: Modification, VAC: High. (2) Not seen.

Soils / Geology: (1) Unstable v-notches. Unit reconfigured to avoid these areas.

Fisheries / Watershed: (1) Class 2 stream immediately downslope.

Wildlife: (1) Marbled murrelet and N goshawk surveys were negative. (2) Recommend leaving green reserve trees and snags for vertical structure and other wildlife habitat values. (3) Suspected red tail hawk nest not found. (4) Canadian goose seen in beaver ponds east of unit. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Provide a programmed timber yield.
(6) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative for this small patch because partial harvest is of poor feasibility because of downhill yarding. Blowdown of reserve trees would be likely in a clearcut with reserves and other partial cutting methods, and there would be no conflict with visuals or need to enhance soil mixing to forestall podsol formation over and above that provided by a clearcut. Clearcut is the most optimal method for timber yield and subsequent productivity, while still meeting resource objectives. Defer treatment would not provide a timber yield and would not replace a decadent stand with high growth potential with a young and vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit consists of the southern-most setting of a larger paper-plan unit which was dissected into two units, eliminating the central setting due to soil and slope instability. All unit boundaries as presently configured are original logging setting boundaries. The south, west, and east unit boundaries border the vegetation transition into low productivity and low volume areas. The proposed road is the east boundary.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs-Class 2 buffer and Class 3 streams excluded but bordering unit.
BMP 13.5 Protection of Potentially Unstable Areas-deleted area separating 29198 from 29101.
BMP 13.9 Suspended Log Yarding - One end suspension to minimize sediment yield.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Enhance volume and value productivity by adding SS to the stand.
(3) Schedule PCT and favor SS.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29101 ALTERNATIVE(S): B C D E

ACRES: 14.83 TOTAL NET MBF: 429.6 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 181



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29102	MAP:	137	ACRES:	24
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-180
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	-	-	-	-	-	-	-	-	-	-
VC-5	24.2	22.4	95%	WH - HC	110-120	55	L	G	-	H	L
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	1.1	5%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		23.5	100%	-	-	52	L	G	-	H	L

STAND CHARACTERISTICS

Mid elevation stand of W. hemlock series, volume class 5, composed of large sawtimber with high defect and average mortality. There is w hemlock yellow cedar series on transitions that has some good quality cedar. Stand structure is uneven with poor vigor and high mechanical defect in the mature understory; overstory age is 300 to 400 years. Northeast-facing slopes are moderately steep with moderately well drained soils. Understory is very open, with blueberry and scattered shield fern. Advanced conifer regeneration is present only in small groups under canopy gaps created by windthrow, overall less than 10% cover. Regeneration potential is high and potential productivity is high.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Small slackline required. (2) Skyline extensions through buffer and tiebacks required. (3) Heavy partial cut feasible. (4) Directional felling required on stream buffer. (5) Guylines required outside unit at landing #2, with tiebacks required.

Visual Resource Management: (1) VQO: Modification, VAC: Intermediate. (2) Not seen.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) Class 2 stream requiring a 100 ft TTRA buffer to northeast.

Wildlife: (1) Surveys for N Goshawk and marbled murrelet were negative. (2) Recommend leaving green reserves and snags for vertical structure and other wildlife habitat values.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Provide a programmed timber yield.
(6) Skyline extensions required into buffer.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was the selected alternative because it is an efficient Rx for harvest economics, regeneration, and timber growth while meeting other resource objectives. Clearcut would not retain wildlife habitat values. Shelterwood with reserves would impede subsequent timber growth and provide less yield. Planned blowdown is not a factor as podsol formation is not a concern in this unit with well-drained soil. Group selection would enter the area more frequently, with potential impacts on water quality, and provide lower production of timber. Defer treatment would not provide a timber yield and would not replace an overmature stand with rapid growing young timber.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The northeast unit boundary follows a Class 2 TTRA buffer. Part of the unit as originally conceived was dropped upon field review and adjustment of stream classification. The unit was shortened to the west to leave a logical future unit between 29102 and 29103. The boundary to the southeast follows the vegetation transition from productive timberland into low productivity/volume forest and muskeg areas.

Soil, Water, and Wildlife Conservation:

BMP 13.3: designate Water Quality Protection Needs - 100 ft TTRA Class 2 buffer and Class 3 in unit.
BMP 13.9: Suspended Log Yarding - One end suspension.
BMP 18.1: Reserve trees maintained for wildlife values.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Plant SS to improve value and volume productivity.
(3) Schedule PCT and favor SS and YC.

MONITORING PLAN

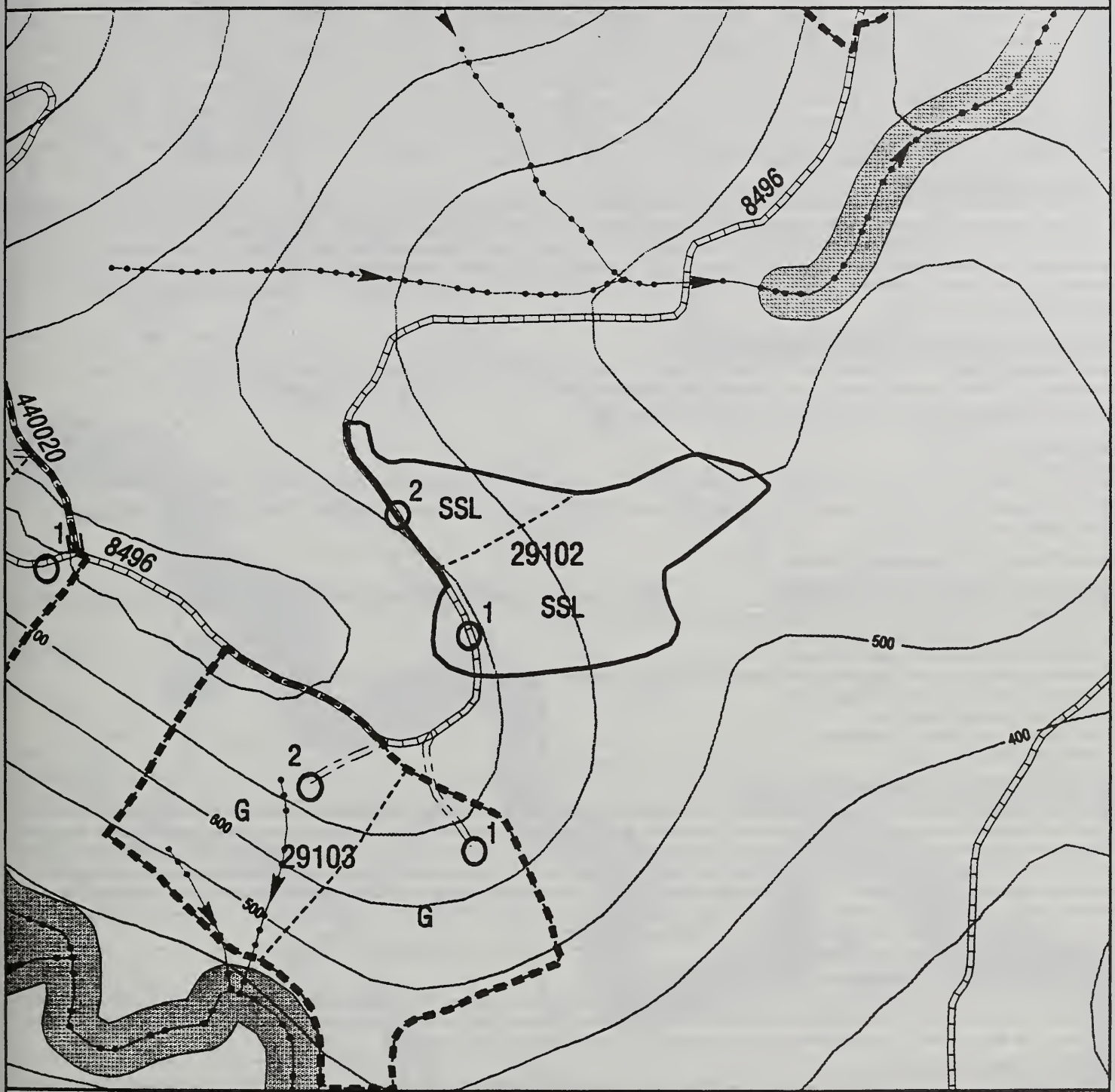
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29102 ALTERNATIVE(S): B C D E

ACRES: 23.46 TOTAL NET MBF: 495.8 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 180



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29103	MAP:	142	ACRES:	43
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-180
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	14.8	35%	XC	420-430	42	L	P	M	L	L
VC-5	24.2	28.0	65%	HC-WH	220-115	55	M	MP	L	M	M
VC-6	37.5	-	-	-	-	-	-	-		-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		42.8	100%	-	-	51	M	MP	cedar decline	M	M

STAND CHARACTERISTICS

Lower to mid elevation stand of W. hemlock-yellow cedar and W. hemlock series in VC5 - medium sawtimber with high defect and average mortality, and mixed conifer series in VC4 - small sawtimber with average defect and low mortality. The mixed conifer VC4 occurs on the poorer drained soils in the eastern portion of the unit. Stand structure is a mosaic of uneven and 2-storied, with overstory age 300+ years. North to NE facing slopes are moderate to steep with two small class 3 v-notch drainages; soil drainage is moderately poor in VC5 and poor in VC4. Understory is blueberry with skunk cabbage common, rusty menziesia heavy in places. Advanced conifer regeneration is light to moderate in VC4; regeneration potential is moderate in VC5, low in VC4. Potential productivity is fair to good. Windthrow is a predominant management concern, as well as cedar decline occurring in VC4 only.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 ft tower and 1 1/4" skyline configured for gravity return. (2) 2 landings located on two 320 ft temp roads of easy and average construction. (3) Feasible for heavy partial cut. (4) Directional felling required on stream buffer. (5) Skyline extensions through buffer.

Visual Resource Management: (1) VQO: Modification, VAC: High. (2) Not seen.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) 100 ft TTRA buffer required on Class 2 stream. (2) Full suspension recommended on Class 3 v-notch in western third of unit.

Wildlife: (1) Suitable Canadian goose habitat. (2) Recommend green tree and snag retention for vertical structure and other wildlife habitat values. (3) Suspected N goshawk seen in area but not confirmed.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of commercial timber species.
(6) Provide a programmed timber yield.
(7) Full suspension over Class 3 in western unit.
(8) Skyline extensions through buffer.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative because: (1) Provides a high volume yield from a defective stand with high potential and low current net productivity; (2) Reserve tree selection provides large defective hemlock and yellow cedar and Sitka spruce of good phenotype for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, and visual softening of harvest impacts. Logging systems feasibility is good for a heavy partial cut. Clearcut would provide a 5-10% higher timber yield but less regeneration of the higher valued and longer lived species without planting and would not ameliorate the impacts to visual or wildlife habitat resources as well as clearcut with reserves. Shelterwood with reserves, selection, and sanitation salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The north west boundary is the proposed road and follows a transition into low productivity and muskeg. The northeast boundary is a setting break that allows for a future unit between 29103 and 29102. The southeast boundary is located on a transition to low productivity forest. The southwest boundary is a 100 ft TTRA buffer on a Class 2 fish stream. The west boundary is a yarding setting boundary that leaves a future unit between 29103 and 29106.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - 100 ft TTRA buffer on Class 2, full suspension on Class 3 in unit.
BMP 13.9 Suspended Log Yarding - one end suspension save where full suspension noted.
BMP 13.16 Stream Channel Protection - protected Class 3 in unit.
BMP 18.1: Reserve trees and snags for wildlife habitat diversity.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance
(2) Schedule PCT and favor SS and YC.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29103 ALTERNATIVE(S): B C D E

ACRES: 42.76 TOTAL NET MBF: 801.5 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 180



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29104	MAP:	146	ACRES:	27
AERIAL PHOTO YEAR:	89	FLIGHT LINE:	28			PHOTO #'S:	988-205
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	14.3	53%	WH	110-130	45	M	MP	-	M	L
VC-5	24.2	0.1	0%	-	-	-	-	-	-	-	-
VC-6	37.5	10.8	40%	WH	120-130	65	H	M	-	H	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	1.7	6%	HC	220	40	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		26.9	100%	-	-	50	M	MP	-	H	M

STAND CHARACTERISTICS

Lower to mid elevation stand of large sawtimber in the westem hemlock series with areas of westem hemlock-yellow cedar series. The upper unit is VC 6 and the lower unit VC 4 with a small inclusion (< 3 acres) of low productivity forest land near the northeast comer. VC4 on the lower east aspect is large sawtimber with extremely high defect and few snags. VC6 on the upper slope is large sawtimber with low defect , high quality logs, and average mortality. The low productivity inclusion is small sawtimber with average defect and mortality. Stand structure is functionally even-aged except in the low productivity inclusion. Overstory age is 300 plus years. Soils on the predominantly northeast aspect are moderately steep with moderately poor to moderate soil drainage except poor where low productivity. Understory is blueberry with skunk cabbage in VC 4. VC 6 is blueberry with shield fem and devils club . Advanced conifer reproduction occupies less than 20% understory cover. Regeneration potential is high and potential productivity is high to moderate except for low and fair in the low productivity area.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 ft slackline with 1 1/8 in skyline. (2) Partial harvest not feasible and snag retention a safety issue. (3) Tail trees on the east boundary.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Not seen from ferry routes.

Soils / Geology: No concems.

Fisheries / Watershed: No concems.

Wildlife: (1) Suitable for Vancouver Canadian goose habitat. (2) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concems.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Maintain diversity of commercial timber species.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut was the selected altemative because is provides the highest volume yield at the lowest cost, while still meeting resource objectives. Other even-aged altematives were not indicated because of poor feasibility for partial harvest, less yield, and poorer projected establishment and growth. Group selection would impact the stand more frequently and provide less yield. Defer treatment would not regeneration a stand with good quality timber and moderate to high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The east boundary is a TTRA Class 2 stream buffer. The south, west, and northwest (below the road) boundaries follow the transition to low productivity forest. The northwest boundary above the road is a logging setting with a future unit retained between 29104 and 29105.

Soil, Water and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Schedule PCT to adjust stocking and favor SS and YC.

MONITORING PLAN

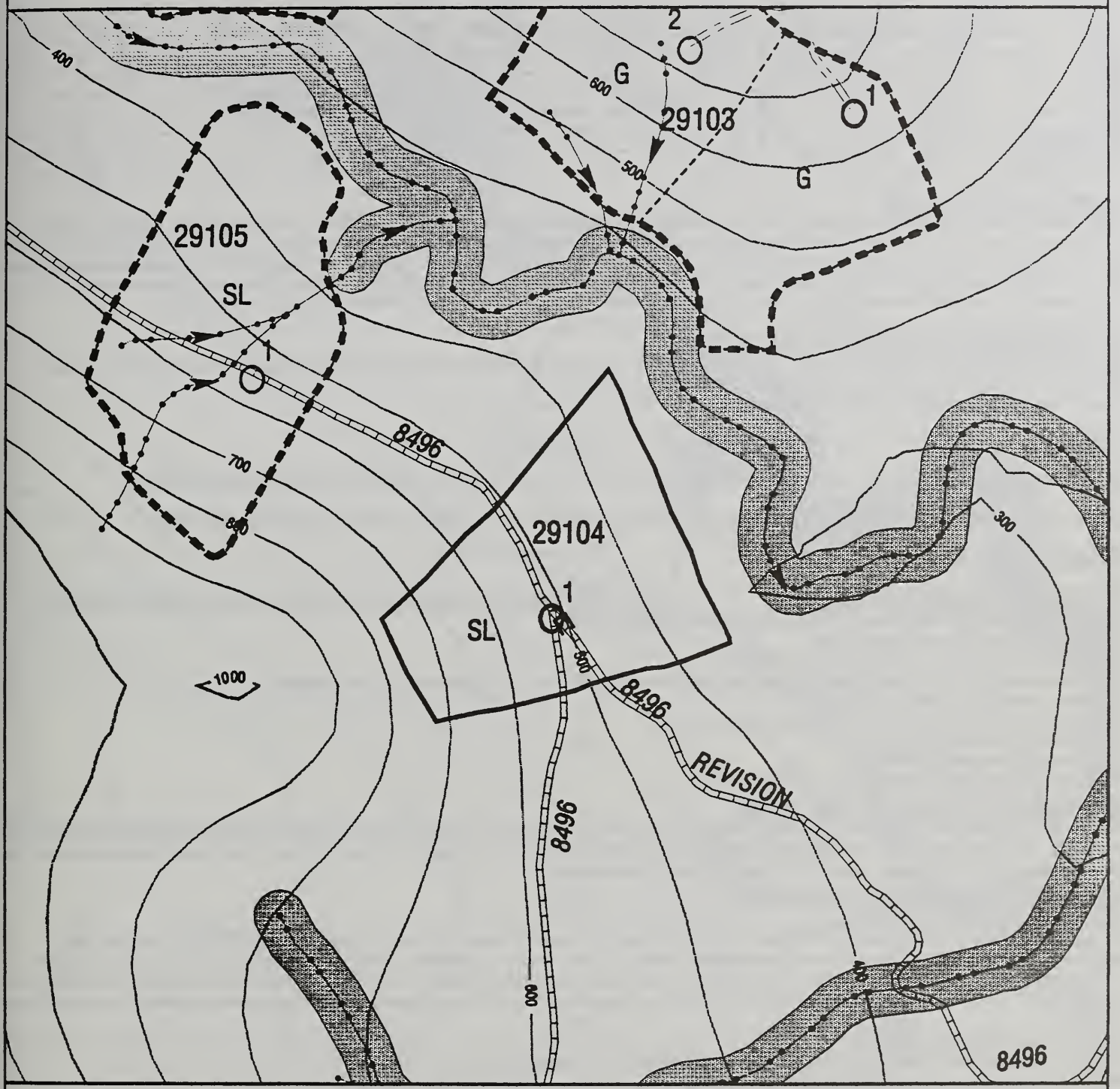
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29104 ALTERNATIVE(S): B C D E

ACRES: 26.96 TOTAL NET MBF: 563.4 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 205



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29105	MAP:	144	ACRES:	31
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	28			PHOTO #'S:	988-205
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	9.2	30%	HC	210-230	50	L	MP	L	M	M
VC-5	24.2	5.5	18%	WH-HC	110-210	55	M	M	-	H	L
VC-6	37.5	14.0	45%	WH	120-130	65	M	M	-	H	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	2.1	7%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		30.8	100%	-	-	54	M	MP	decline	M	M

STAND CHARACTERISTICS

Lower to mid elevation stand of large sawtimber in the western hemlock and western hemlock-yellow cedar series. Defect is low to average and mortality is average to high. Mosaic of VC 4, VC 5, VC6, and a 2 acre inclusion of low productivity: VC 6 upper slope, VC 4 and low productivity midslope, and VC 5 lower slope near the riparian buffer. Stand structure is functionally even-aged with overstory age 250-300 years. The northeast aspect is steep in the VC 6 and gentle to moderately steep with two v-notch class 3 drainages. Soil drainage is moderate to moderately poor. Understory is blueberry with skunk cabbage, devils club, and rusty menziesia on lower slopes. Advanced conifer reproduction occupies less than 20% of potential growing space. Regeneration potential is high and potential productivity is moderate to high.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 ft slackline with 1 1/4 inch skyline. (2) Partial harvest not feasible and snag retention a safety hazard. (3) Skyline extensions required through Class 2 stream buffer to obtain full suspension and reach timber over blind lead.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Not seen from ferry route.

Soils / Geology: (1) Small slide in unit limits road location. (2) Exclude Hazard Class IV soils from timber harvest.

Fisheries / Watershed: (1) Min 100 ft TTRA buffers required on Class 2 streams to north at unit bottom and extending upslope from the northeast corner.

Wildlife: (1) Suitable woodpecker habitat. (2) Recommend green tree and snag retention for vertical habitat structure and other wildlife habitat values.

Cultural / Recreation / Subsistence: No concern.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of commercial timber species.
(6) Exclude Hazard Class IV soils from the commercial timber base.
(7) Provide a programmed timber yield.
(8) Skyline extensions through stream buffer.
(9) Skyline with Partial Suspension; Full Suspension not feasible.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because it provides the highest volume yield at the lowest harvest cost and provides the best conditions for regeneration and subsequent productivity. Other evenaged methods were not selected because of poor logging feasibility. Group selection would impact the stand more frequently and provide less yield. Defer treatment would not regenerate a stand with moderate to high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The northeast boundary is a TTRA Class 2 stream buffer. The southeast boundary follows a higher order Class 2 channel requiring a TTRA buffer until the stream classification changes to Class 3 where the stream enters the unit. Prior to field review the entire higher order channel was classified as Class 3. The upper southeast boundary is a setting break to a future unit between 29105 and 29104. Some windthrow should be expected in the leave strip. The northwest boundary is the setting break to a future unit. The south boundary breaks where slopes are greater than 70% leaving a fringe of timber between the unit and low-site/muskeg areas along the upper ridge.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 TTRA buffers; full suspension on Class 3 in unit.
BMP 13.9 Suspended Log Yarding
BMP 13.5 Protection of Potentially Unstable Areas
BMP 13.16 Stream Channel Protection

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Planting YC and SS to improve volume and value productivity.
(3) Schedule PCT, favor YC and SS.

MONITORING PLAN

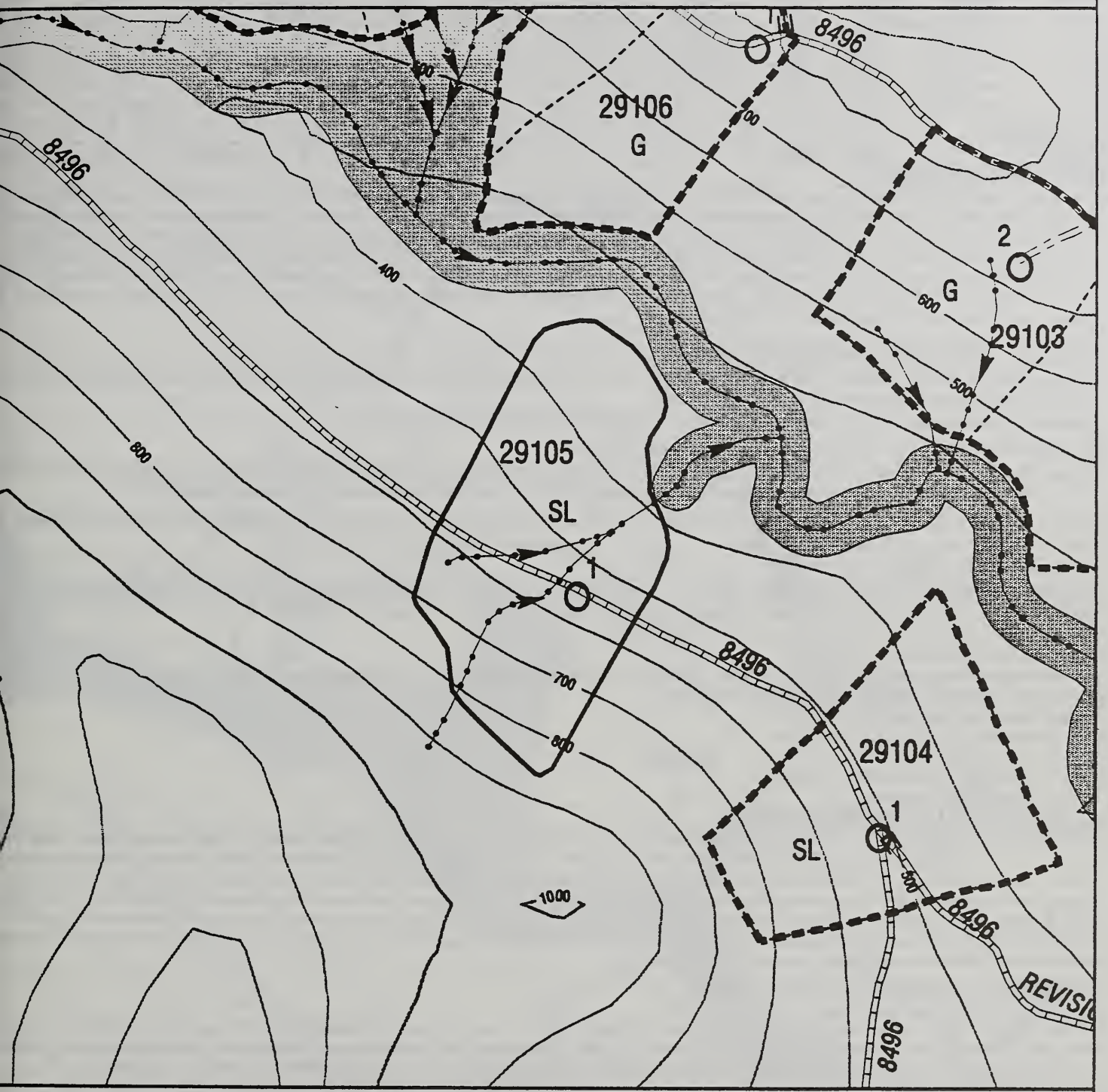
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29105 ALTERNATIVE(S): B C D E

ACRES: 30.78 TOTAL NET MBF: 724.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 205



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29106	MAP:	131	ACRES:	88
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-176
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	37.3	43%	HC-WH	210-230	50	M	MP	L	M	L
VC-5	24.2	14.0	16%	WH-HC	110-130	55	H	M	L	H	M
VC-6	37.5	35.4	40%	WH-HC	110-120	65	H	M	L	H	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	1.0	1%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		87.7	100%	-	-	56	H	M	mistletoe	H	M

STAND CHARACTERISTICS

Mid to upper elevation stand of medium to large sawtimber in the western hemlock and western hemlock-yellow cedar series. VC 4, VC 5, and VC 6 occur in a mosaic and occurrence is associated with moderately poor to moderate soil drainage and gentle to moderately steep slopes respectively. The stand is dense to moderately open with YC in clumps and concentrated in VC 4. and SS scattered across the unit. Defect and mortality are average to high with green culls, dead topped trees, and snags scattered throughout the stand. Stand structure is functionally even-aged with overstory age over 300 years. The south to southwest aspect is moderately steep with two small v-notch class 3 drainages. Understory is blueberry and occasional rusty menziesia with skunk cabbage most common in VC 4 and shield fern and devil's club most common in VC 6. Advanced conifer reproduction occupies less than 20% of growing space. Regeneration potential is high and potential productivity is high to moderate. Dwarf mistletoe is present but not abundant and windthrow is also a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Large and small slacklines and gravity outhaul proposed. (2) Heavy partial harvest feasible below landings. (3) Skyline extensions required through buffers. (4) Directional felling required to protect stream buffers.

Visual Resource Management: (1) VQO: Modification; VAC High. (2) Background 12.5 mile view from ferry route.

Soils / Geology: (1) Hazard Class III soils in unit. (2) Low productivity forest soils.

Fisheries / Watershed: (1) V-notch in center of stand is Class 2 and requires a min 120 ft TTRA buffer. (2) Class 2 stream on south boundary requires a min 100 ft TTRA buffer. (3) Recommend split yard or full suspension over major Class 3 streams in unit. (4) Recommend avoid sidehill yarding to extent feasible.

Wildlife: (1) N Goshawk and marbled murrelet surveys had no response. (2) Recommended green tree and snag retention for vertical habitat structure and other wildlife values. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and a poor understory.
(2) Improve timber volume and value productivity.
(3) Reduce sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Exclude low productivity forest soils from commercial timber base.
(6) Mitigate background visual impact to ferry route.
(7) Maintain diversity of commercial timber species.
(8) Provide a programmed timber yield.
(9) Skyline extensions through stream buffer required.
(10) Skyline with One End Suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut and clearcut with reserves are the selected alternatives because: (1) Provides a high volume yield from a defective stand with high potential and low current net productivity; (2) Reserve tree selection provides large defective hemlock and yellow cedar and Sitka spruce of good phenotype for vertical and cavity nesting habitat structure. (3) Seed sources are retained for the higher valued timber species. (4) Visual impacts of harvest are softened by retention of reserve trees and enclaves. Clearcut with reserves would be limited to the VC 4 areas of the stand where soil drainage is mod poor and podzol formation is a concern. Logging systems feasibility is good for a heavy partial cut. Clearcut alone would provide a 5% higher timber yield but regeneration of the higher valued and longer lived species would be less favorable and impacts to visual or wildlife habitat resources would be greater. Group selection would impact the stand more frequently and provide less yield. Defer would not provide a timber yield and would not regenerate a unit with high to moderate potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The west boundary buffers a large Class 3 v-notch stream. The south boundary is a TTRA Class 2 stream buffer that extends into the lower center of the stand to protect a complex class 2 tributary. The north boundary borders low-site and muskeg areas. The northwest and northeast corners of the unit were modified to exclude low productivity forest. The east boundary is the logging setting boundary that leaves a logical unit between 29106 and 29103. Some windthrow is expected in the leave strip.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs- Class 2 buffers, Class 3 split yard and/or retention areas.
BMP 13.9 Suspended Log Yarding. BMP 13.16 Stream Channel Protection. BMP 13.15: Unit excludes muskeg.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and planned blowdown of reserve trees in VC 4.
(2) Schedule PCT and favor SS and YC.

MONITORING PLAN

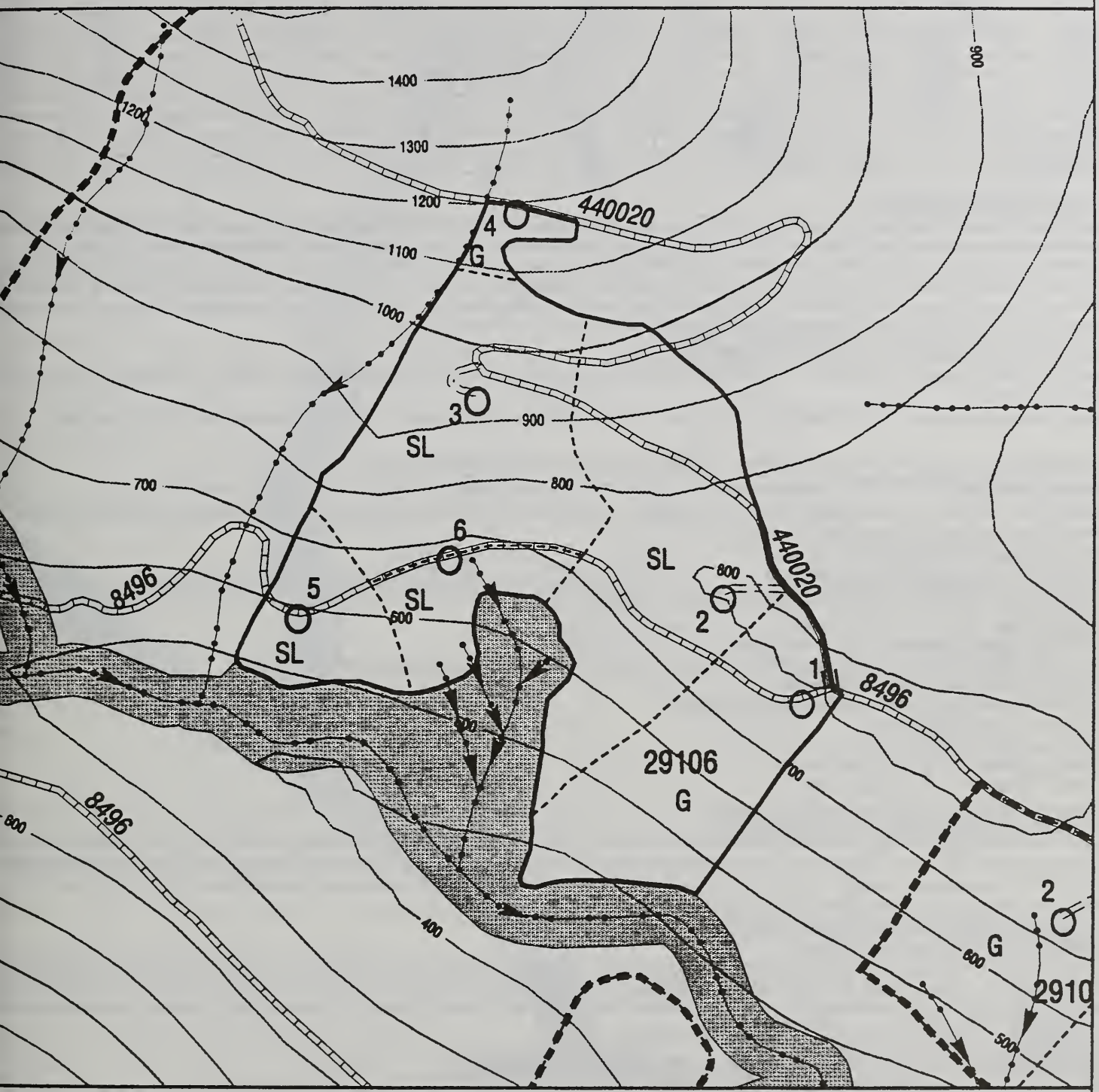
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29106 ALTERNATIVE(S): B C D E

ACRES: 87.61 TOTAL NET MBF: 1988.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 176



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29107	MAP:	124	ACRES:	62
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-176
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	7.7	12%	HC	220	45-hem	L	P	-	M	M
VC-5	24.2	46.8	76%	S	390	60-spruce	M	G	-	M	M
VC-6	37.5	7.4	12%	S	390	70-spruce	M	G	-	M	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		61.9	100%	-	-	59	M	G	-	M	M

STAND CHARACTERISTICS

Upper elevation stand of large sawtimber with extremely high defect and average mortality in VC 5 and VC 6. Sitka spruce series, specifically the Sitka spruce-Mtn hemlock plant association is predominant in VC 6 and VC 6. VC 4 is small sawtimber in the western hemlock-yellow cedar series with average defect and low mortality. Stand structure is functionally even-aged in spruce type, uneven and 2-storied in HC type. Overstory age is over 300 years. North to east aspects are moderately steep to steep with numerous class 3 drainages and small v-notches. Soils are well drained in SS series and poorly drained in WH-YC series. The blueberry understory is sparse in the SS series and dense with abundant skunk cabbage in WH-YC series. Advanced conifer regeneration is sparse and in poor condition. Regeneration potential is low to moderate. Potential productivity is moderate to high. Regeneration potential and stream instability are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 ft slackline. (2) Heavy partial harvest feasible. (3) Skyline extensions through stream buffer required. (4) directional felling by stream buffer recommended.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Background view at 12.5 miles from ferry route and 6 miles from north arm of Farragut Bay.

Soils / Geology: (1) Stability of Class 3 stream channels. (2) Hazard Class IV soils and snow avalanche shoots.

Fisheries / Watershed: (1) TTRA Class 2 stream buffer required. (2) Recommend split yarding across v-notches in north section of stand.

Wildlife: (1) Possible Northern Goshawk sighting that was not confirmed. (2) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Exclude Hazard Class IV soils from the commercial timber base.
(7) Provide a programmed timber yield.
(8) Directional felling on stream buffers.
(9) Skyline extension through TTRA buffer required.
(10) Skyline Yarding with One End Suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative over clearcut because a heavy partial harvest is feasible below the landings and scattered groups of reserve trees and snags will ameliorate the visual impact and retain wildlife habitat structure elements. Shelterwood with reserves was not indicated because soil drainage is generally good and YC and SS regeneration and growth will be more favorable with less shade. Selection and sanitation salvage are not feasible without helicopter harvest and it is doubtful that net increment can be achieved without stand regeneration.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The south boundary is a Class 2 stream buffer. The west boundary is a Class 2 stream buffer of a higher order tributary that was upgraded from Class 3 during field review and the portion of the unit as originally configured west of the stream was dropped. . The east boundary buffers a large Class 3 v-notch . The four running skyline settings to the north were dropped per Forest Service opinion and exclude the area of concern regarding instability of multiple high gradient Class 3 channels. The northeast boundary was established to exclude > 70% slope with evidence of snow avalanches.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 TTRA buffers, directional felling.
BMP 13.9 Suspended Log Yarding - one end suspension.
BMP 13.5 Protection of Potentially Unstable Areas.

Forest Productivity Activities:

(1)Soil mixing and warming from logging disturbance.
(2) Plant SS and YC to improve volume and value productivity.
(3) Schedule PCT and favor SS and YC.

MONITORING PLAN

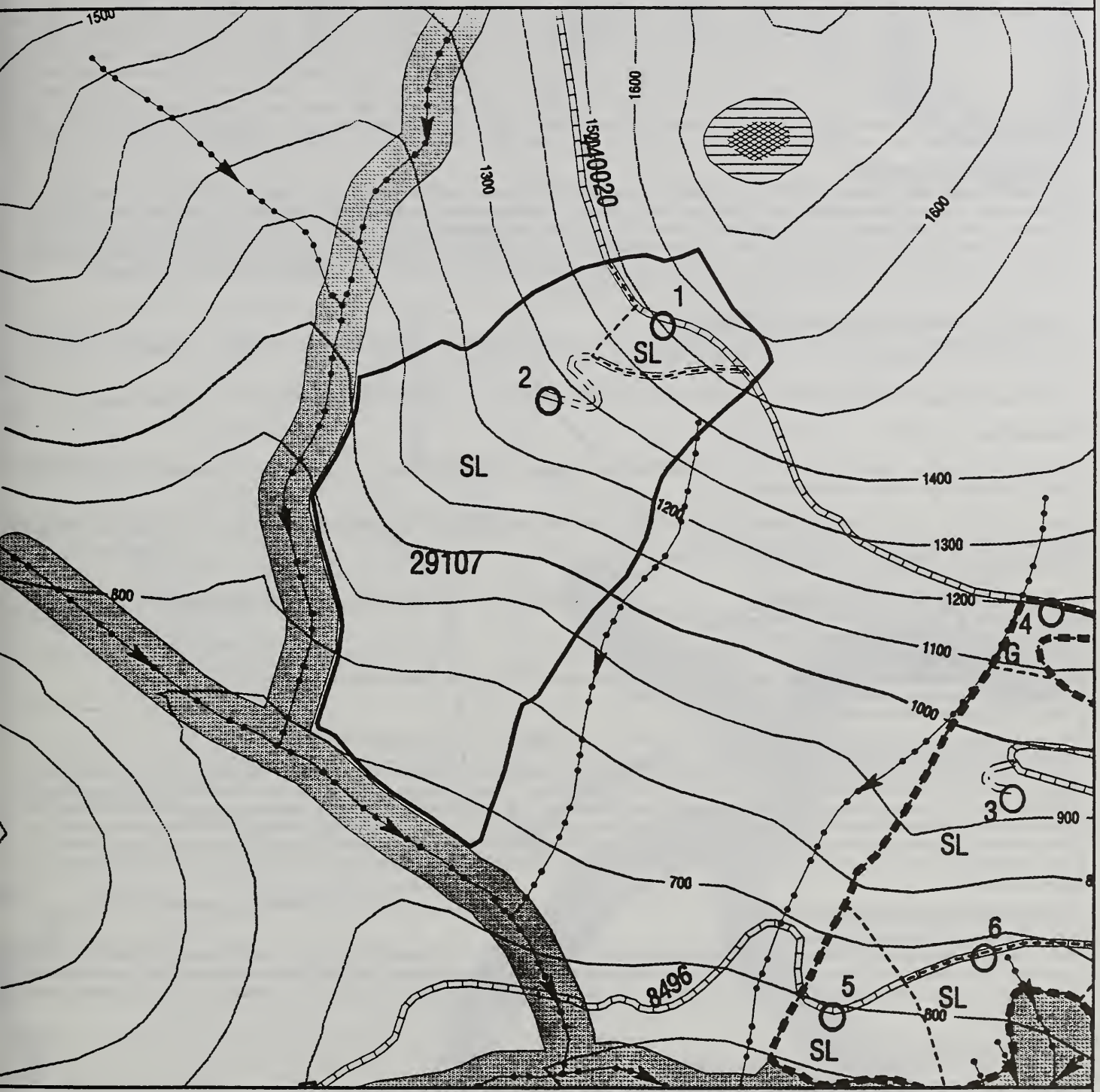
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29107 ALTERNATIVE(S): B C D E

ACRES: 61.87 TOTAL NET MBF: 1369.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 176



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29111	MAP:	134	ACRES:	40
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	27			PHOTO #'S:	888-151
						ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	11.2	28%	HC	210-220	50	M	MP	L	M	M
VC-5	24.2	28.4	72%	WH-S	110-370	60	M	MP	L	H	H
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		39.6	100%	-	-	57	M	MP	mistletoe	H	H

STAND CHARACTERISTICS

Mid to upper elevation stand of medium sawtimber with average defect and mortality. Predominant forest series is W hemlock-yellow cedar with W hemlock with a spruce component across the stream in the northeast portion of the unit. The VC 4 occurs on the flatter west and southwest portion of the stand . Low site areas are on the west and southwest unit fringe, contiguous with areas excluded from the stand during field review. Stand structure is functionally even-aged with more open canopies in the VC 4 and low site areas. Most merchantable timber is greater than 240 yrs old. Low site inclusions are areas of poor drainage are indicated by deer cabbage. Potential productivity is poor to good. Blueberry and skunk cabbage are common understory species. Advanced reproduction is poor to fair and occupies less than 20% of growing space. Windthrow and soil stability are management concems by the Class 3 stream courses.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 Ft tower with complex guylines and anchors required for southwest setting; partial harvest is not feasible. (2) Helicopter only feasible harvest method for northwest portion of unit if full suspension is required over Class 3 stream course splitting unit NW to SE.

Visual Resource Management: (1) VQO: Maximum Modification; (2) VAC: High: (3) Partially seen in background from ferry route (+/- 12 mi) , negligible impact.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) Class 2 stream requiring 100 ft buffer on southeast unit boundary. (2) Class 3 stream course in unit is over steepened in unit and requires split yarding or full suspension to minimize sedimentation.

Wildlife: (1) Recommend leaving snags and green reserve trees for vertical structure diversity and other wildlife habitat values. (2) Suitable Canadian goose habitat. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Maintain vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of merchantable timber species.
(6) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected altemative because: (1) Provides a high volume yield from a defective stand with high potential and low current net productivity; (2) Cable logging systems feasibility is poor for partial harvest and protection of the Class 3 stream course.; (3) feathered edge on low site areas and no-cut buffer on Class 3 (see marking rules & on map) are essentially within unit reserves, and (4) clearcut is more favorable for survival and growth of planted YC. The higher volume north and east extent of the unit was modified to helicopter harvest because of overriding concem to minimize sediment yield. Clearcut with reserves or shelterwood with reserves would provide less timber yield and subsequent growth and poorer conditions for YC regeneration. Visual impact is a negligible management concem. Group selection is feasible on the helicopter ground but was not selected for the same reasons that the even-aged with reserves Rx are not favored. Defer would not regenerate an overmature stand with a defective overstory.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit boundary along the west and south is located to exclude low productivity muskeg fringe and provide suitable tail anchors. The unit boundary to the east and upslope across the Class 3 stream course is the extent that could be yarded with a conventional skyline system if impact to the Class 3 stream course was not an overriding concem and isolates a small fringe of timber that can be included in future helicopter operations in settings to the east and northwest. The northwest boundary is the logical boundary for cable yarding.

Soil, Water, and Wildlife Conservation:

BMP 13.3: 100 ft TTRA buffer on Class 2 that is SE unit boundary.
BMP 13.5: Full suspension by helicopter yarding across Class 3 .
BMP 13.9: One end suspension on slackline setting.

Forest Productivity Activities:

(1) Plant YC and SS.
(2) Soil mixing and warming from logging disturbance.
(3) Schedule PCT to adjust stocking and favor YC and SS.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29111 ALTERNATIVE(S): B D E SETTING HE EXCLUDED IN ALT(S). E

MAXIMUM ACRES: 39.56 TOTAL NET MBF: 764.2 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 27 ROLL NO.: 888 PRINT NO.: 151



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29112	MAP:	155	ACRES:	67
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	27			PHOTO #'S:	888-152
						ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	19.8	30%	HC-XC	210-430	50	L	P	-	L	L
VC-5	24.2	46.0	69%	HC	210	55	M	MP	L	M	M
VC-6	37.5	-	-	-	-	0	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	0.7	0.01	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		66.5	100%	-	-	53	M	MP	mistletoe	M	M

STAND CHARACTERISTICS

Mid elevation stand of medium sawtimber that is a timbered island amid muskeg and low site areas (some of which were deleted during field review) . Forest series are western hemlock in VC 5 on west facing slope blending into a mosaic of WH-YC and mixed conifer in poorly drained inclusions. Defect and mortality is average and there is no cedar decline. Advanced regeneration is poor and occupies less than 20% of growing space. Stand structure is functionally even-aged . Most merchantable timber is > 350 yrs old. There is a minor amount of recent windthrow and a minor amount of mistletoe is present . Soil drainage is moderate on the better drained west aspect with VC 5 and moderately poor or poor, as evidenced by deer cabbage on the low site inclusions. Blueberry is the predominant understory species with some devil's club on steeper and better drained sites. Potential productivity is fair to good

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Partial harvest feasible. (2) Mix of running skyline and slackline systems required for 5 settings. (3) Complex guyline anchors, slackline extensions, and tail trees may be required. (4) 1330 ft of temporary spur required.

Visual Resource Management: (1) VQO: Modification, VAC: High

Soils / Geology: No concerns.

Fisheries / Watershed: No stream buffers required.

Wildlife:(1) Potential Mtn Goat travel corridor. (2) Suitable Canadian goose habitat. (3) Recommend leaving green reserve trees and snags for vertical structure diversity and other wildlife habitat values. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistance: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Maintain diversity of commercial tree species.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Design alternative silviculture systems to provided operational demonstrations of adaptive management trials.
(6) Provide a programmed timber yield.
(7) Suspended Log Yarding.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut settings 2 & 5 / Clearcut w/Reserves settings 1, 3 & 4. This harvest pattern provides a contrast between two regeneration methods and provides for vertical habitat diversity . This adaptive management trial will test windthrow and regeneration patterns and yellow cedar and Sitka spruce regeneration. Integration of shelterwood with reserves and group selection into this silvicultural pattern would add complexity to an already complicated harvest system design, would harvest less timber, and would not meet the integrated resource objectives any better than the selected alternatives. Defer would not provide a timber yield and would not regenerate a unit with low watershed impact.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundary location follows the edge of the productive timberland amid the mosaic of muskeg and low site ares and logical yarding limits. Unit size was reduced from the paper plan by dropping the low site area in the extreme NW of the unit as proposed in the paper plan. A timbered fringe will be left on unit margins.

Soil, Water, and Wildlife Conservation:

13.3 Designate Water Quality Protection Needs
13.9 Suspended Log Yarding

Forest Productivity Activities:

(1) Plant YC and SS
(2) Soil mixing and warming from logging disturbance and blowdown of retention trees.
(3) Schedule PCT and favor YC and SS for improved species diversity and timber value productivity.

MONITORING PLAN

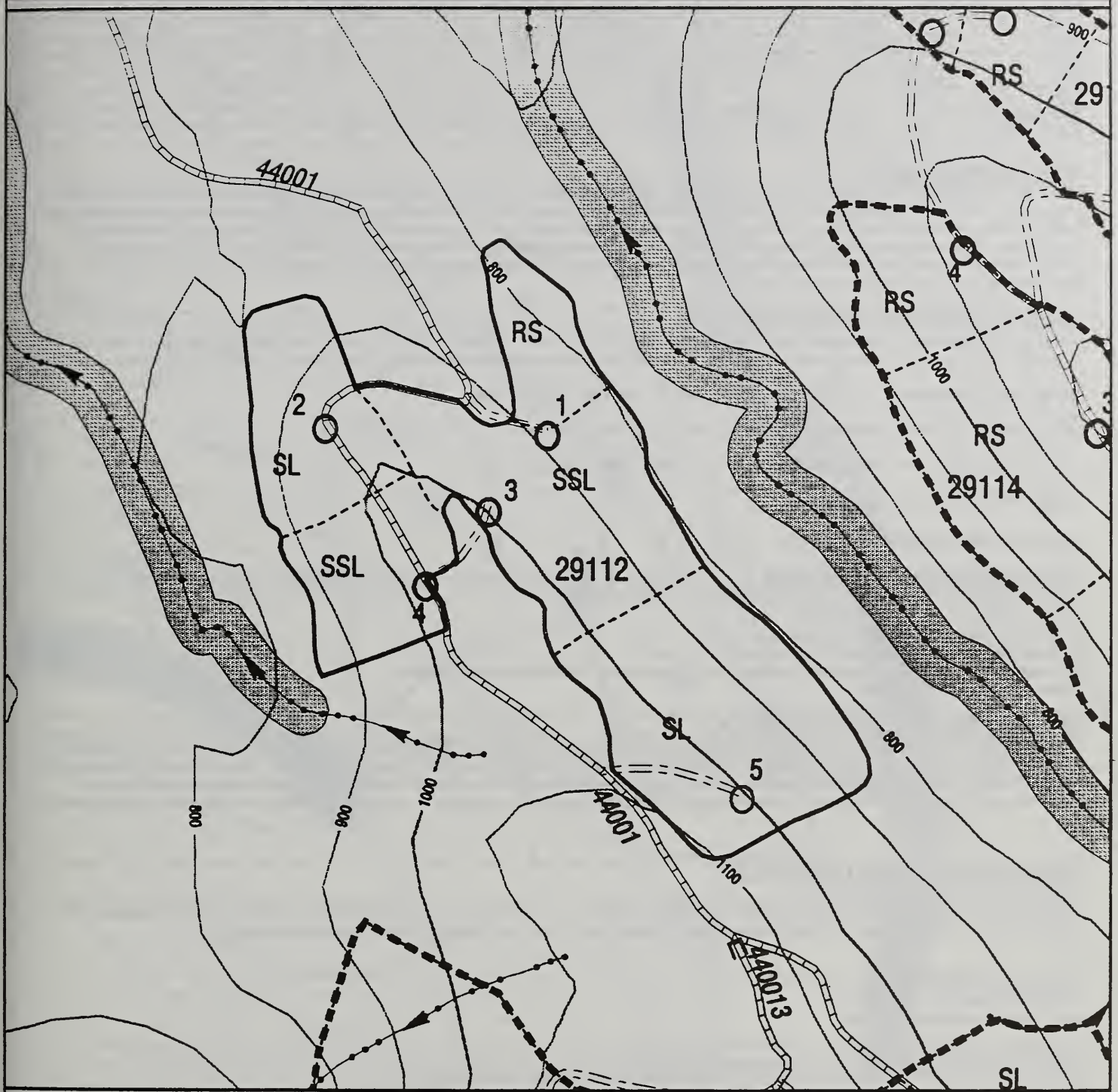
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist
Year 70 to 90	Commercial Thinning	Residual 160 sq ft /ac	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29112 ALTERNATIVE(S): B D E

ACRES: 66.47 TOTAL NET MBF: 1264 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 27 ROLL NO.: 888 PRINT NO.: 153



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29113	MAP:	167	ACRES:	72
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	28			PHOTO #'S:	988-204
						ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	46.2	64%	HC-XC	210-220	50	L	MP	-	M	L
VC-5	24.2	11.1	15%	HC	220	60	M	MP	-	H	M
VC-6	37.5	14.5	20%	HC-WH	220-110	65	M	M	-	H	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		71.8	100%	-	-	55	L	MP	-	M	L

STAND CHARACTERISTICS

Mid to upper elevation stand of small to large sawtimber with average defect and mortality. Western hemlock-yellow cedar series predominates with small inclusions of mixed-conifer series near the west boundary where timber merges into low-site and muskeg . Upper slopes tend to western hemlock series. Stand structure is functionally even-aged with a relatively young 200-250 year old overstory component. Snags are scattered throughout the unit. Aspects are SW and NE, the unit topographically bisected by a SE trending ridge in the western-third of the unit. Slopes are moderately steep with intermittent benches, soil drainage moderately poor to moderate. Understory vegetation is primarily blueberry and rusty menziesia with skunk cabbage common, and some shield fern in better drained microsites. Little advanced conifer reproduction is present. Regeneration potential and potential productivity are good.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 ft slackline required. (2) 1500 ft of temporary road required. (3) Complex guyline anchors, tail trees, and skyline extensions outside unit boundaries may be required. (4) Partial harvest is not feasible. (5) Potential rock pit on knob behind lading #3. (6) Small area below road in NW to be end-lined with cat.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Unit not seen from ferry routes.

Soils / Geology: (1) Productivity and regeneration of low productivity soils adjacent to muskegs.

Fisheries / Watershed: (1) No buffers required as unit is located away from Class 2 drainage to south.

Wildlife: (1) Possible mountain goat travel corridor.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Maintain diversity of merchantable timber species.
(4) Exclude low productivity forest sites from the commercial timber base.
(5) Design alternative silviculture prescriptions to provide operational demonstrations of adaptive management trials.
(6) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut was the selected alternative that maximizes logging economics and timber productivity with little conflict with watershed, wildlife, or visual resources. Yellow cedar and vertical wildlife habitat structure will be mitigated by feathered edges favoring cedar retention on unit boundaries as described below. Other even-aged techniques are not indicated because economics, logging system feasibility, and cedar regeneration are more favorable with clearcut. Uneven-aged and intermediate treatments were not selected because of the existing stand structure and logging feasibility . Defer treatment would not regenerate an overmature stand with a favorable mix of high valued species.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East unit boundary follows edge of productive timberland along low-site/muskeg areas. The lower north boundary follows a Class 3 stream course. Unit boundaries to north, south, and west were chosen as logging setting boundaries. Buffers to adjacent units to north, west, and south are logical future logging settings.

Soil, Water, and Wildlife Conservation:

BMP 13.9 Skyline Yarding
BMP 13.19: Reforestation in setting #2.

Forest Productivity Activities:

(1) Plant yellow cedar and favor healthy yellow cedar retention for seed and value increment in feathered edges.
(2) Soil mixing and warming from logging disturbance and blowdown of residual trees in feathered edge.
(3) Schedule PCT and favor YC and Sitka spruce for improved species diversity and value productivity.

MONITORING PLAN

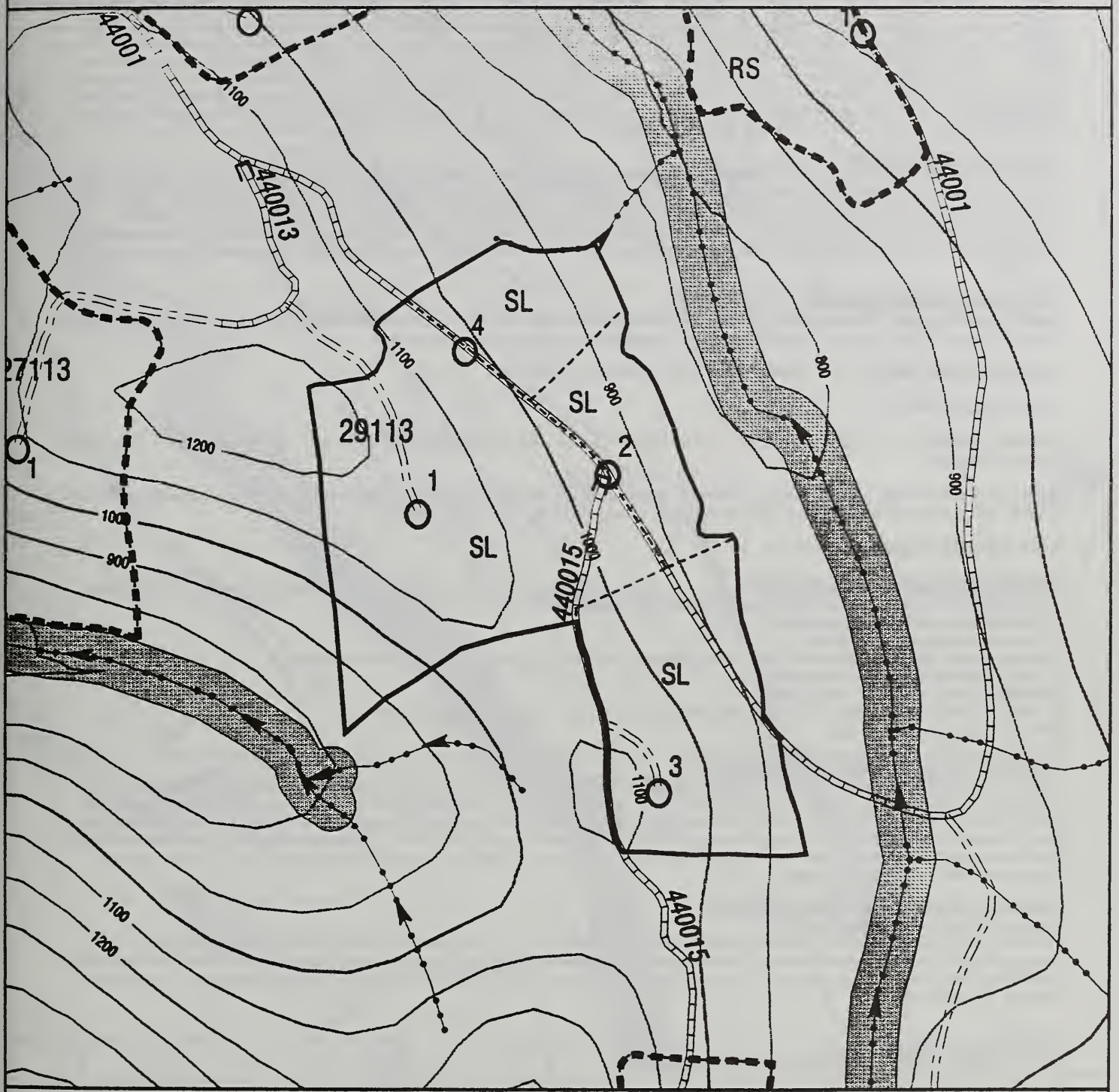
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29113 ALTERNATIVE(S): B D E

ACRES: 71.85 TOTAL NET MBF: 1330.5 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 204



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.23:23:17.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 890 | UNIT #: 29114 | MAP: 154 | ACRES: 65
AERIAL PHOTO YEAR: 1989 | LIGHT LINE: 28 | PHOTO #'S: 988-204
ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	45.6	70%	WH-HC	140-210	50	M	M	-	M	M
VC-5	24.2	19.4	30%	WH	120	80	H	M	-	H	M
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		65.0	100%	-	-	59	M	M	-	M	M

STAND CHARACTERISTICS

Mid to upper elevation western hemlock and W. hemlock-yellow cedar stand comprised of medium to large sawtimber with moderately to high defect. Mortality is high and snags are abundant.. Stand structure is even aged with an overstory age of 300 to 400 years on upper slopes with uneven-aged structure on stand fringes. . Slopes are moderately steep to steep with moderate soil drainage. There are numerous minor and stable Class 3 streams in unit. Blueberry is the dominant understory vegetation, with devils club or shield fern common in western hemlock plant associations . Advanced conifer regeneration occupies less than 20% of growing space and is predominantly WH. . Regeneration potential is high except moderate devils club dominated microsites and unit fringes. Potential productivity is medium to high.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Running skyline. (2) Complex guylines, anchors, tail trees, and skyline extensions outside of unit required. (3) Heavy partial cut feasible but snag retention is a safety issue. (4) Access trails required on muskeg behind landings to install complex anchors.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Not seen from ferry routes.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) Class 2 stream located to southwest is buffered by strip of low productivity timberland and muskeg . (2) Unit includes minor Class 3 stream courses that are stable.

Wildlife: (1) Possible mountain goat travel corridor. (2) Suitable Canadian goose and red breasted sap sucker habitat. (3) Recommend leaving green reserve trees and snags for vertical structure diversity and other wildlife habitat values. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concern.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an over mature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Maintain mountain goat travel corridor.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of commercial timber species.
(6) Minimize sediment yield to fish bearing streams.
(7) Design alternative silviculture prescriptions to provide operational demonstrations of adaptive management trials.
(8) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative because a heavy partial harvest is feasible with minor impact to harvest economics, timber yield, and productivity. Uneven-aged management is not an option in most of the stand given stand structure and conventional logging systems. Shelterwood with reserves was not selected because planned blowdown in the unit save in the feathered edge at unit bottom would not appreciably reduce podsolization as soils are moderately well-drained and would reduce yield and be unfavorable for harvest economics, cedar and spruce regeneration, and timber growth. A clearcut size reduction by eliminating settings at this entry was considered but not chosen because harvest of 29114 and 29115 concurrently removes all commercial timber tributary to the local road and minimizes management disturbance over the next rotation.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The northeast boundary follows a natural break into low-site volume areas along the ridge. The gentle ridgetop separating 29114 and 29115 is an open mosaic of muskeg and low site forest with evidence of use as a wildlife travel route. The southwest boundary excludes low productivity forest areas on a bench with poorly drained soil above the Class 2 stream course and resulted in no explicit stream course buffer because of width of the excluded area.. The south boundary is a logging setting boundary that abuts low site forest

Soil, Water, and Wildlife Conservation:

BMP 13.9 Yarding Operations: Skyline Yarding with One End Suspension

Forest Productivity Activities:

(1) Plant yellow cedar and provide yellow cedar seed trees to maintain cedar component in the managed stand.
(2) Soil mixing and warming from logging disturbance and blowdown of reserve trees.
(3) Planting of SS in a portion of the unit.
(4) Schedule PCT and favor SS and YC for species diversity and value productivity.

MONITORING PLAN

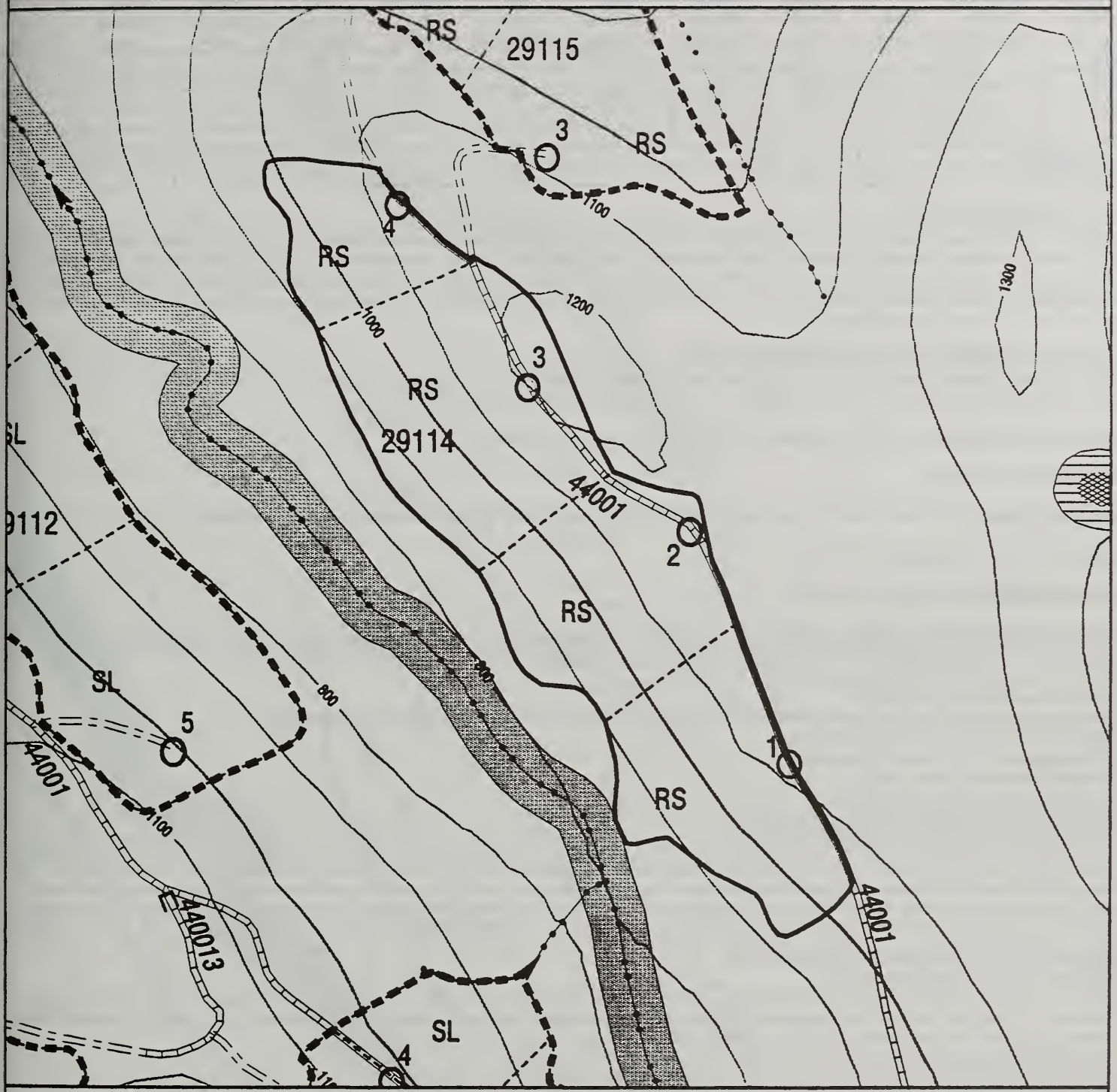
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29114 ALTERNATIVE(S): D

ACRES: 65 TOTAL NET MBF: 1012.3 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 204



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29115	MAP:	150	ACRES:	26
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	27			PHOTO #'S:	888-152
						ALTERNATIVE(S):	C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	7.5	28%	HC	210-220	50	M	M	-	M	M
VC-5	24.2	8.6	33%	WH	140	55	M	MP	-	M	M
VC-6	37.5	10.3	39%	WH	120	65	M	MP	-	M	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		26.4	100%	-	-	57	M	MP	-	M	M

STAND CHARACTERISTICS

Mid to upper elevation stand of medium and large sawtimber in the western hemlock-yellow cedar and western hemlock series. The WH-YC series is located in the northern 25% of the unit Occasional dominant Sitka spruce to 150 ft occur in unit. Defect and mortality are high. Stand structure is functionally even-aged with large sawtimber age 300 plus years and merchantable understory averaging 150 yrs. Slopes are moderately steep, broken by intermittent benches, with moderate soil drainage except for poor on the benches.. Understory shrubs are mostly blueberry, with devils club, skunk cabbage, and salmonberry . Advanced conifer reproduction is sparse. Regeneration potential is high and potential productivity are high.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Running skyline with complex guyline anchors, tail trees, and skyline extensions through stream buffers required. (2) Partial cut not feasible and snag retention is a safety hazard. (3) 1900 ft of temporary road required. (4) Fall timber away from buffer.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Not seen from ferry route.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) Class 2 stream with cutthroat trout present and poor bank stability and shade canopy on northeast unit boundary.

Wildlife: (1) Possible mountain goat travel corridor.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Maintain mountain goat travel corridor.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Maintain diversity of commercial timber species.
(7) Provide a programmed timber yield.
(8) Skyline Yarding with One End Suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because it provides a high volume yield from a defective stand with high potential and low current net productivity and partial harvest is not feasible with conventional logging systems. Uneven-aged management is not indicated by present stand structure and is not feasible without helicopter yarding. Clearcut with reserves and shelterwood with reserves are not indicated because of the problem with logging feasibility and relatively small unit size and location to seed sources and mature forest habitat. Regeneration concurrently with 29114 removes all conventional commercial timber settings tributary to the local road and minimizes management disturbance over the next rotation. Defer treatment would not regenerate a unit with high potential productivity nor provide a timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East boundary was located along class 3 stream course with a 100 ft-plus TTRA buffer added to north east where stream becomes Class 2. The remainder of the unit is bordered by low productivity forest with boundaries located to follow the edge of commercial timberland. The gentle ridgetop separating 29114 and 29115 is an open mosaic of muskeg and low site forest with evidence of use as a wildlife travel corridor.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Designate Water Quality Protection Needs - Class 2 stream with 100 ft TTRA buffer and Class 3 stream
BMP 13.9: Skyline Yarding with One End Suspension
BMP 13.16: Plant conifers and seed with Sitka alder in openings along Class 2 / Class 3 stream on northeast boundary.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Planting YC and SS.
(3) Schedule PCT and favor YC and SS for species diversity and value productivity.

MONITORING PLAN

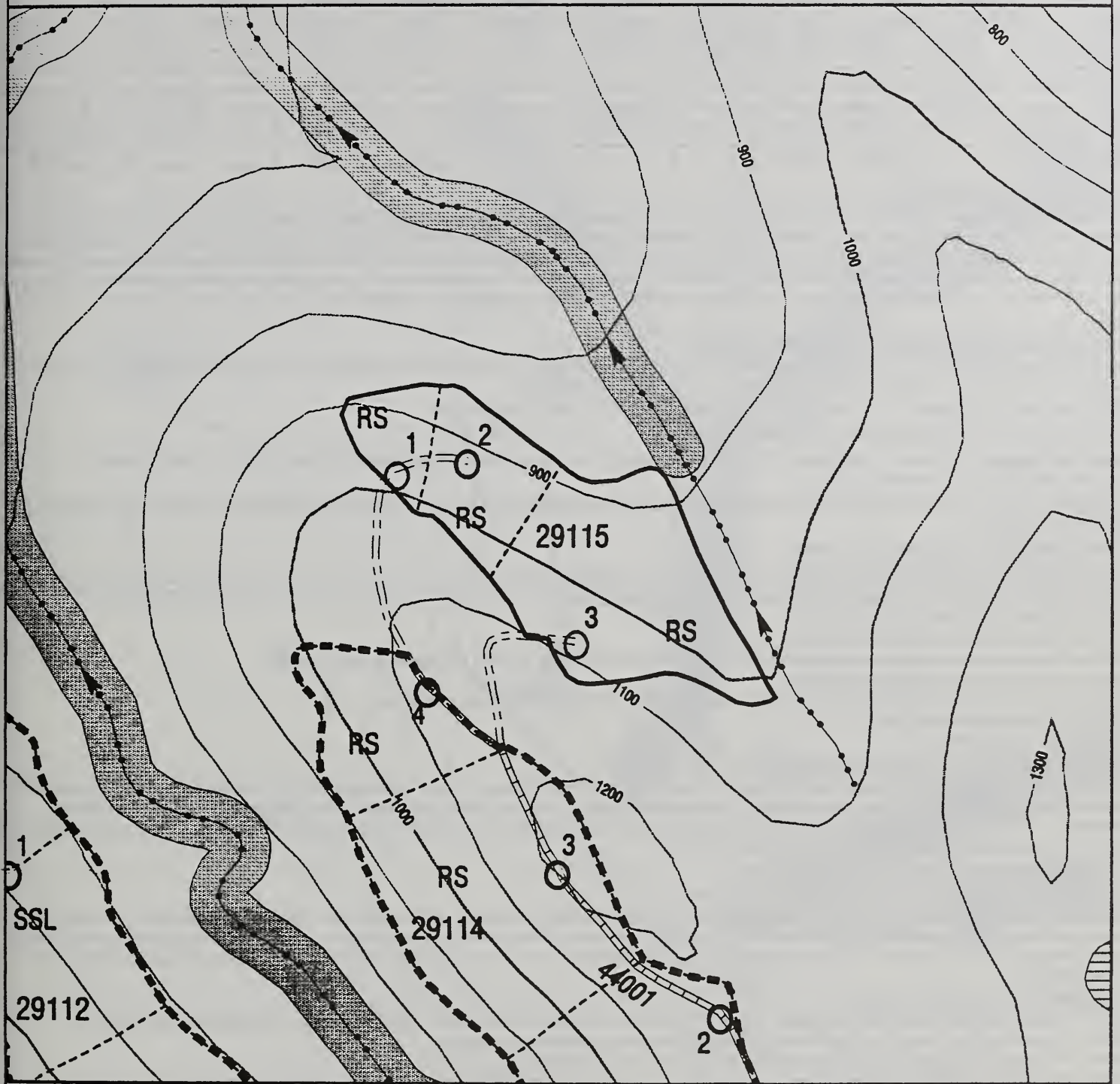
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29115 ALTERNATIVE(S): D

ACRES: 26.33 TOTAL NET MBF: 631.3 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 177



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29117	MAP:	161	ACRES:	32
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	28			PHOTO #'S:	988-204
						ALTERNATIVE(S):	B, C, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	27.5	85%	HC-XC	220-420	50	M	MP	-	M	M
VC-5	24.2	0.8	2%	HC	220	55	M	M	-	M	M
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	4.1	13%	XC	420-430	40	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		32.4	100%	-	-	44	M	MP	-	M	M

STAND CHARACTERISTICS

Mid elevation stand of medium to small sawtimber in the western hemlock-yellow cedar and mixed conifer series. Defect and mortality is low to moderate. Yellow cedar composes up to 50% of stand volume with no chronic cedar decline. Stand structure is functionally even-aged with 350 year old overstory. Slopes are moderately steep with soil drainage moderately poor. A class 2 stream is located along the southeast to northeast boundary and portions have steep banks with mass wasting evident. V-notches occur within the unit that drain immediately into the Class 2. Understory is blueberry with skunk cabbage common throughout. Advanced conifer reproduction occupies less than 20% of growing space. Regeneration potential and potential productivity are moderate. Several small low-site/muskeg islands are located on the bench in the lower unit.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Large and small slackline in unit, mostly downhill yarding. (2) 2160 ft of temporary road within unit with easy construction. (3) Guylines within Class 2 TTRA buffer. (4) Partial harvest is not feasible. (5) Fall trees away from buffer.

Visual Resource Management: (1) VQO: Modification; VAC: Intermediate. (2) Not seen from ferry routes.

Soils / Geology: (1) Low productivity forest and muskeg within unit.

Fisheries / Watershed: (1) Class 2 stream course on southeast to northeast boundary with steep banks and evidence of mass wasting. (2) Full suspension is recommended over Class 3 v-notches in the unit.

Wildlife: (1) Suitable habitat for Canadian goose and red breasted sapsucker. (2) Recommend leaving green reserve trees and snags for vertical structure diversity and other wildlife habitat values.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an over mature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of commercial timber species.
(6) Design alternative silviculture prescriptions to provide operational demonstrations of adaptive management trials.
(7) Provide a programmed timber yield.
(8) Suspended Log Yarding.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because partial harvest is not feasible with conventional logging systems and because it is the most efficient method for regeneration of favored species (YC and SS) , improved timber productivity, and harvest economics. Stand structure did not indicate an opportunity for uneven-aged or intermediate treatments. Uncut islands will be left around muskeg areas in the unit where compatible with logging systems. Defer treatment would not regenerate an over mature stand with moderate potential productivity and would not provide a timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Southwest and northwest boundaries are the setting boundaries for conventional logging with helicopter settings occurring adjacent on the upper slope. The adjacent helicopter settings are included in the proposed Stikine helicopter salvage and would otherwise be deferred for future entry. The northeast to southeast boundary follows a TTRA buffer on the Class 2 stream A proposed north setting and portions of settings 1 and 2 were deleted when the Class 2 stream course was upgraded from Class 3 during field review.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 TTRA buffer and Class 3 v-notches requiring 100% suspension in unit and directional felling areas.
BMP 13.9 Suspended Log Yarding - Full suspension on v-notches in unit, one end suspension elsewhere.
BMP 13.16 Stream Channel Protection - Directional felling and slash removal on v-notches.
BMP 13.15: Wetland protection--50' buffers around muskegs.

Forest Productivity Activities:

(1) Planting YC and SS to maintain cedar component in stand and improve volume productivity respectively.
(2) Soil mixing and warming from logging disturbance.
(3) Schedule PCT and favor SS and YC for species diversity and value productivity.

MONITORING PLAN

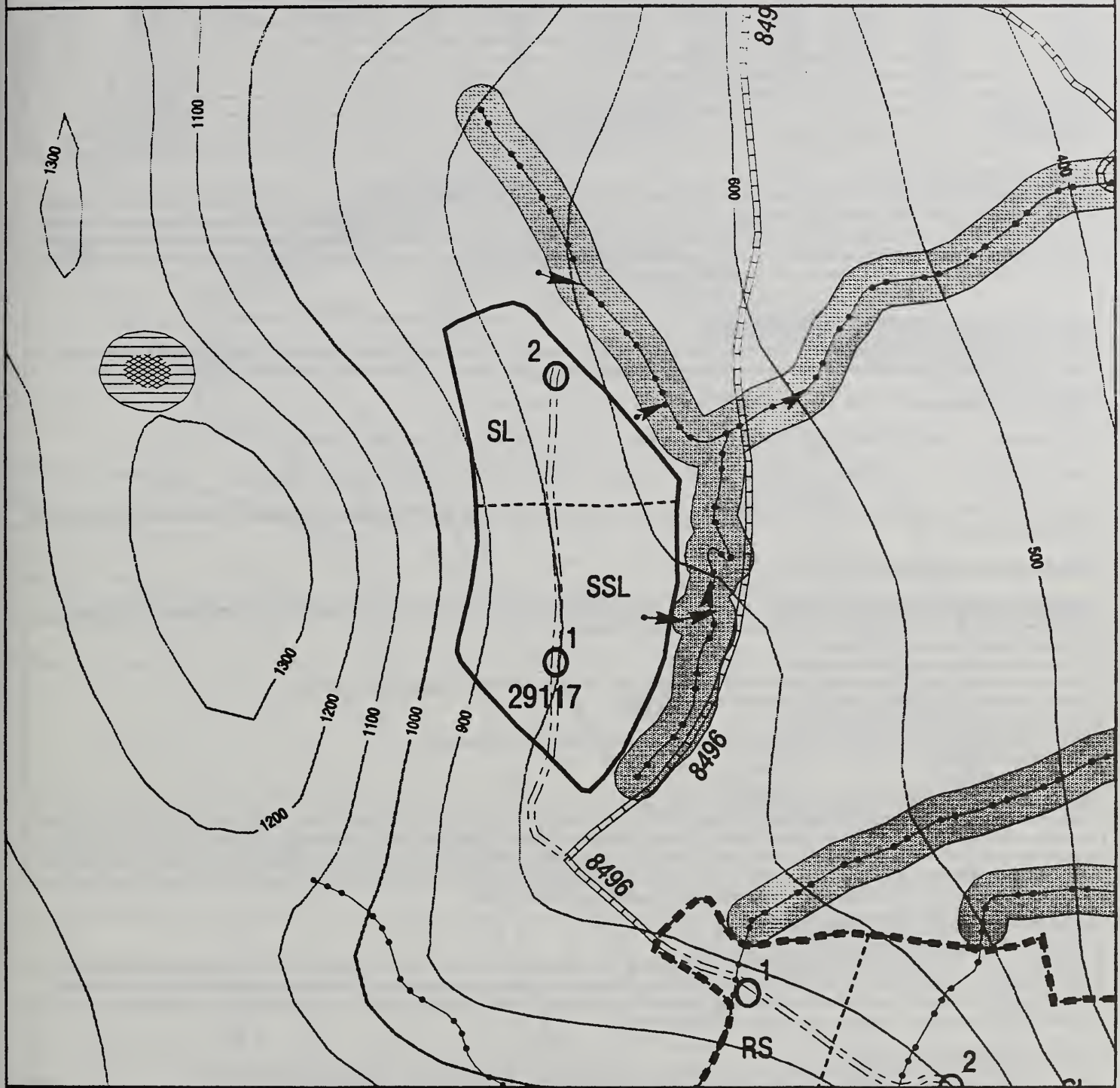
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29117 ALTERNATIVE(S): B C D

ACRES: 32.36 TOTAL NET MBF: 396.6 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 204



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29119	MAP:	168	ACRES:	89
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	28			PHOTO #'S:	988-204
						ALTERNATIVE(S):	B, C, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	15.0	17%	WH	110	50	M	M	-	M	M
VC-5	24.2	48.5	54%	HC-WH	220-120	55	M	M	-	M	M
VC-6	37.5	25.8	29%	HC-WH	220-120	60	H	M	-	M	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		89.3	100%	-	-	56	M	M	-	M	M

STAND CHARACTERISTICS

Low to mid elevation stand of medium to large sawtimber in the western hemlock-yellow cedar (VC 4 and VC 5) and western hemlock (VC 5 and VC 6) series. Defect and mortality is low to moderate. Stand structure is functionally even-aged with overstory age 200 to 300 years. Slopes are moderately steep, dissected by three class 3 streams with small v-notches, and soil drainage is moderate. Understory shrubs are blueberry with scattered skunk cabbage on swales and benches and devils club and shield fern on steeper slopes. Advanced conifer regeneration is sparse except for a few small pockets in canopy gaps from windthrow. Regeneration potential and potential productivity is moderate to high. Windthrow and soil stability are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Running skyline, large slackline, and small slackline proposed. (2) Heavy partial harvest is feasible and snag retention is a safety concern. (3) Guylines, tail trees, and skyline extensions through stream buffers may be required. (4) Tailtrees required. (5) Fall trees away from buffers. (6) Temp road required.

Visual Resource Management: (1) VQO: Modification, VAC: Intermediate. (2) Not seen from ferry routes.

Soils / Geology: (1) Hazard Class III soils. (2) Productivity and regeneration of low site forest soils. (3) Class IV soils upslope of unit.

Fisheries / Watershed: (1) Class 2 stream course requires a 100 ft TTRA buffer. (2) Two Class III v-notches cross unit and extend upslope.

Wildlife: (1) Recommend leaving green reserve trees and snags for vertical structure diversity and other wildlife habitat values. (2) Surveys for northern goshawk and marbled murrelet had no response.

Cultural / Recreation / Subsistence: No concern.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an over mature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Exclude Hazard Class IV and low productivity forest soils from timber base.
(6) Maintain diversity of commercial timber species.
(7) Design alternative silviculture systems to provide operational demonstrations of adaptive management trials.
(8) Provide a programmed timber yield.
(9) Suspended Log Yarding.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative because a heavy partial harvest is feasible with minor impact to harvest economics, timber yield, and productivity. Uneven-aged management and intermediate treatment are not options given stand structure and conventional logging systems. Shelterwood with reserves was not selected because planned blowdown would not appreciably reduce podsolization as soils are moderately well-drained and would reduce yield and be unfavorable for harvest economics, cedar and spruce regeneration, and timber growth. No cut buffers were considered for the v-notches within the unit but are not planned because of high blowdown potential. Defer would not regenerate an over mature stand with high potential productivity and regeneration potential.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northwest boundary located to buffer Class 3 stream and excludes a setting from paper plan because most is low productivity forest land. Southwest boundary which is the upslope extension of the unit is defined by the break into over steepened and potentially unstable Hazard Class IV soils. The north to northeast boundary that is the lower extent of the unit is located at a transition into forest land of low volume and poor regeneration and productivity potential. The southeast boundary is located to leave a logical unit between 29119 and 29120. Blowdown may be a problem in this leave strip.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 TTRA buffer and Class 3 streams in unit requiring suspension and directional felling.
BMP 13.9 Suspended Log Yarding - One end suspension required with full suspension over two major Class 3 streams within unit.
BMP 13.16 Stream Channel Protection - Directional felling and slash removal in stream courses.

Forest Productivity Activities:

(1) Planting YC and SS to maintain cedar component and improve volume productivity respectively.
(2) Soil mixing and warming from logging disturbance and blowdown of reserve trees.
(3) Schedule PCT and favor SS and YC for species diversity and value productivity.

MONITORING PLAN

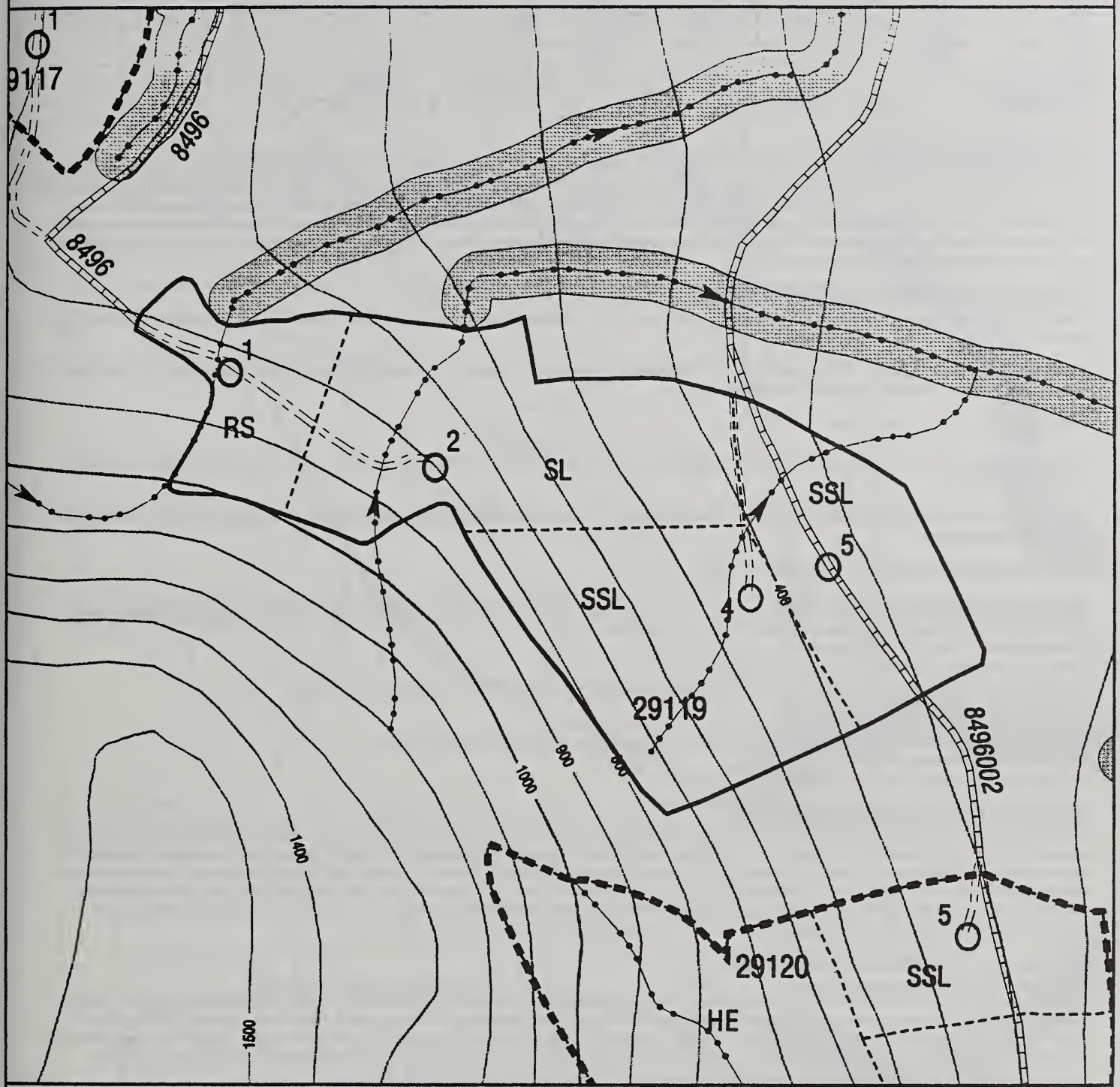
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29119 ALTERNATIVE(S): B C D

ACRES: 89.2 TOTAL NET MBF: 2124.4 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 204



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29120	MAP:	171	ACRES:	77
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	28			PHOTO #'S:	988-203
						ALTERNATIVE(S):	B, C, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	21.1	27%	HC	210	50	M	MP	-	M	M
VC-5	24.2	34.3	44%	WH-HC	110-140	55	M	MP	-	M	H
VC-6	37.5	22.0	28%	WH-HC	110-120	65	M	M	-	H	H
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		77.4	100%	-	-	56	M	MP	-	M	H

STAND CHARACTERISTICS

Low to middle elevation stand of medium to large sawtimber in the western hemlock (2/3 of unit, VC 5 and 6) and western hemlock-yellow cedar series on lower gentle slopes. Defect and mortality is average. Stand structure is functionally even-aged with overstory age 300 to 400 years. Upper slopes are moderately steep to very steep and lower slope is moderate to gentle. A Class 3 stream runs southeast then east through the unit. Soils are moderately well drained on the upper slopes to moderately poorly drained on lower flats. Understory shrubs are dense blueberry, with devils club on steep slopes in central portion of unit and skunk cabbage abundant in the lower unit. Advanced WH reproduction is present in 5-10% of stand,. Regeneration potential is high and potential productivity if moderate to high. Hazard Class III and IV soils and road access slopes are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Road access to upper landings not feasible. (2) Unit redesigned as helicopter and conventional small slackline systems. (3) Temporary road required.

Visual Resource Management: (1) VQO: Modification; VAC: Intermediate. (2) Partly seen in background view from ferry route at 10 mi distance; Middleground view of 3 mi from North Arm and of 6 mi from cabins on Farragut Bay.

Soils / Geology: (1) Hazard Class III soils.

Fisheries / Watershed: (1) Class III stream bisecting unit upgrades to Class II requiring TTRA 100 ft buffer at unit boundary. (2) Recommend full suspension yarding on Class III stream within unit.

Wildlife: (1) No response to northern goshawk and marbled murrelet surveys. (2) Recommend leaving green reserve trees and snags for vertical structure diversity and other wildlife habitat values.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature and decadent stand with a poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of middleground and background visual impact s.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Maintain diversity of commercial timber species.
(7) Design alternative silviculture prescriptions to provide operational demonstrations of adaptive management trials.
(8) Provide a programmed timber yield.
(9) Suspended Log Yarding - Helicopter setting.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative for the conventional skyline setting because a heavy partial cut is feasible and stand conditions indicate that planned blowdown may lessen podzolization in VC 4 and VC 5 on the lower slopes where soil drainage is moderately poor. Reserve trees will also include relatively windfirm YC and SS seed trees. Shelterwood with reserves is the selected alternative for the helicopter portion of the unit. It has attributes similar to clearcut with reserves, but would keep a greater density of the mature stand to provide vertical structure, ecological/soil functions, and protection of soil and water resources. The contrast between two silvicultural methods and two logging systems will provide an adaptive management trial. Stand structure in this unit is not condusive to uneven-aged management techniques. Defer treatment would not regenerate and/or sanitize an overmature stand nor provide a timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The skyline setting is bounded to east by low productivity forestland and to south by Class 2 portion of the stream bisecting the unit which upgrades to Class 2 when the direction of flow change from southeast to east. The northern boundary is the logging setting boundary that leaves a logical future setting between 29119 and 29120. Blowdown may be a problem in this leave strip. The west boundary of the skyline setting is the break to Hazard Class 3 soil within the unit. The boundary running northwest to southeast on the helicopter setting follows the transition into low productivity forest/muskeg and a buffer on the v-notch separating 29120 from 29122. Southwest boundary follows the 100 ft TTRA buffer on the Class 2 upgrade from the v-notch separating 29120 from 29122.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 TTRA buffers and Class 3 bisecting unit.
BMP 13.9 Suspended Log Yarding - Helicopter setting

Forest Productivity Activities:

(1) Soil mixing and warming caused by logging disturbance and blowdown of residual timber.
(2) Schedule PCT thinning and favor SS and YC in skyline portion of unit.
(3) Review helicopter setting for TSI opportunity and monitor response to partial harvest.

MONITORING PLAN

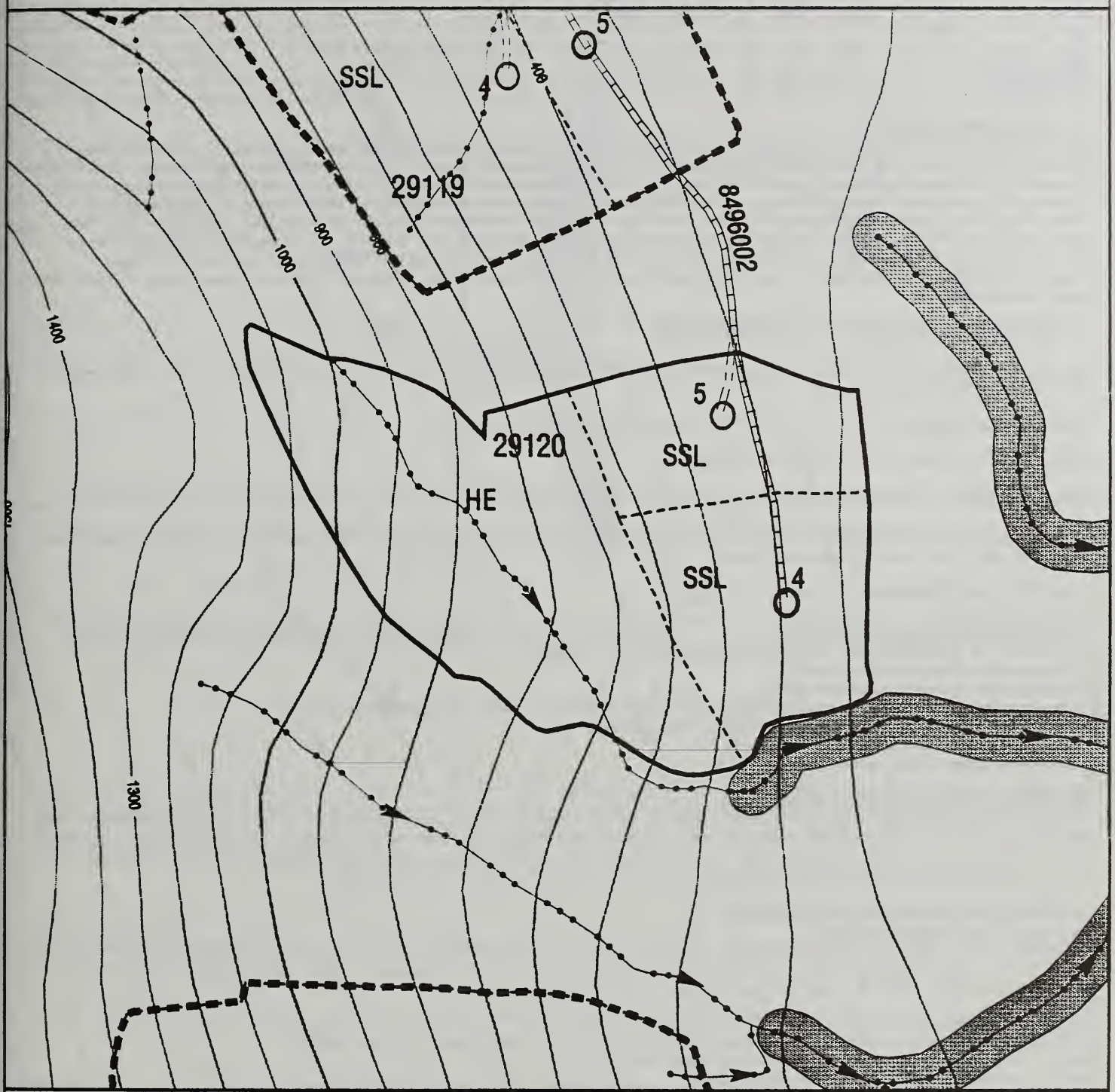
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29120 ALTERNATIVE(S): B C D SETTING HE EXCLUDED IN ALT(S). C

MAXIMUM ACRES: 77.39 TOTAL NET MBF: 1764.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 203



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29121	MAP:	172	ACRES:	80
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	28			PHOTO #'S:	988-203
						ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	17.4	22%	HC	220	50	L	P	-	M	M
VC-5	24.2	49.0	61%	HC	210-250	55	L	MP	-	H	M
VC-6	37.5	10.3	13%	HC - WH	210-110	65	L	M	-	H	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	3.3	4%	HC	220	45	L	P	-	L	M
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		80.0	100%	-	-	53	L	MP	-	H	M

STAND CHARACTERISTICS

Upper elevation stand of medium to large sawtimber in the western hemlock-yellow cedar series with a significant Sitka spruce component (VC 4 and VC 5 and minor low productivity inclusions and a small area of western hemlock series (VC 6) on the upper slope on the east extent of the unit. Defect and mortality is average.. Stand structure is uneven in VC 4 and low productivity and functionally even-aged in VC 5 and 6. Overstory age is 300 to 400 years. Slopes are moderately steep to steep, dissected by numerous high-gradient Class 3 streams. Soils drainage is moderately poor to moderately well drained with some poorly drained areas locally. A low gradient Class 3 stream bisects the unit south to north and upgrades to a Class 2 and exits the unit through a broad deposition flat with well-drained alluvial organic soils. Understory shrubs are blueberry with skunk cabbage common in VC 4 and devils club in common in well-drained swales in VC 5 and VC 6. Salmonberry and alder occur on the alluvial flat and on Hazard Class IV soils adjacent to the unit. Advanced conifer reproduction occupies less than 20% understory cover and is poor to fair in vigor. Regeneration potential is mostly high but is moderate to low in areas of poor drainage. Potential productivity is very high to fair following the same pattern. Excellent Sitka spruce and yellow cedar site.

IV. RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Running skyline and large 90 ft slackline required. (2) Tail trees and skyline extensions through stream buffer required. 2900 ft temporary road required. (4) Partial harvest not feasible.

Visual Resource Management: (1) VQO: Modification; VAC: Intermediate. (2) Not seen from ferry route.

Soils / Geology: (1) Hazard Class IV , low site, and alluvial soils.

Fisheries / Watershed: (1) Recommend split yarding away from buffer on Class 3 bisecting unit. (2) Recommend full suspension on high gradient Class 3 channels.

Wildlife: (1) Unit near mountain goat habitat. (2) Recommend leaving green reserve trees and snags for vertical structure diversity and other wildlife habitat values. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Exclude Hazard Class IV soils and low productivity forest from the timber base.
(6) Maintain diversity of commercial timber species.
(7) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because partial harvest is of poor feasibility and harvest economics, timber productivity, and regeneration of favored species are best with a clearcut. Uneven-aged and intermediate treatments were not indicated by stand conditions nor conventional logging systems. Unit size was reduced by exclusion of Hazard Class IV, alluvial, and low productivity forest soils. A no cut buffer along the Class 3 bisecting the unit reduces watershed and wildlife habitat . Defer treatment would not regenerate a stand with high regeneration potential, high timber value, and high to very high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The west and south boundaries are defined by the transition to Hazard Class IV soils. The north boundary buffers an alluvial deposition complex of stream confluence's and a Class 2 stream and excludes low productivity forest. The north boundary west of the Class 2 stream also excludes an area of alluvial deposition and muskeg and then follows logging setting boundaries with a logical unit retained between 29121 and 29113.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 TTRA buffer, Class 3 no cut buffer, Class 3 full suspension areas.
BMP 13.5 Protection of Potentially Unstable Areas - Exclude Hazard Class IV soils.
BMP 13.8 Protection of Alluvial Soils with Shallow Organic Layer
BMP 13.9 Suspended Log Yarding - Class 3 full suspension, elsewhere one end suspension
BMP 13.16 Stream Channel protection - Directional felling and slash removal from stream courses.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Planting SS and YC to maintain cedar component and enhance value and volume productivity.
(3) Schedule PCT and favor SS and YC for species diversity and value productivity.

MONITORING PLAN

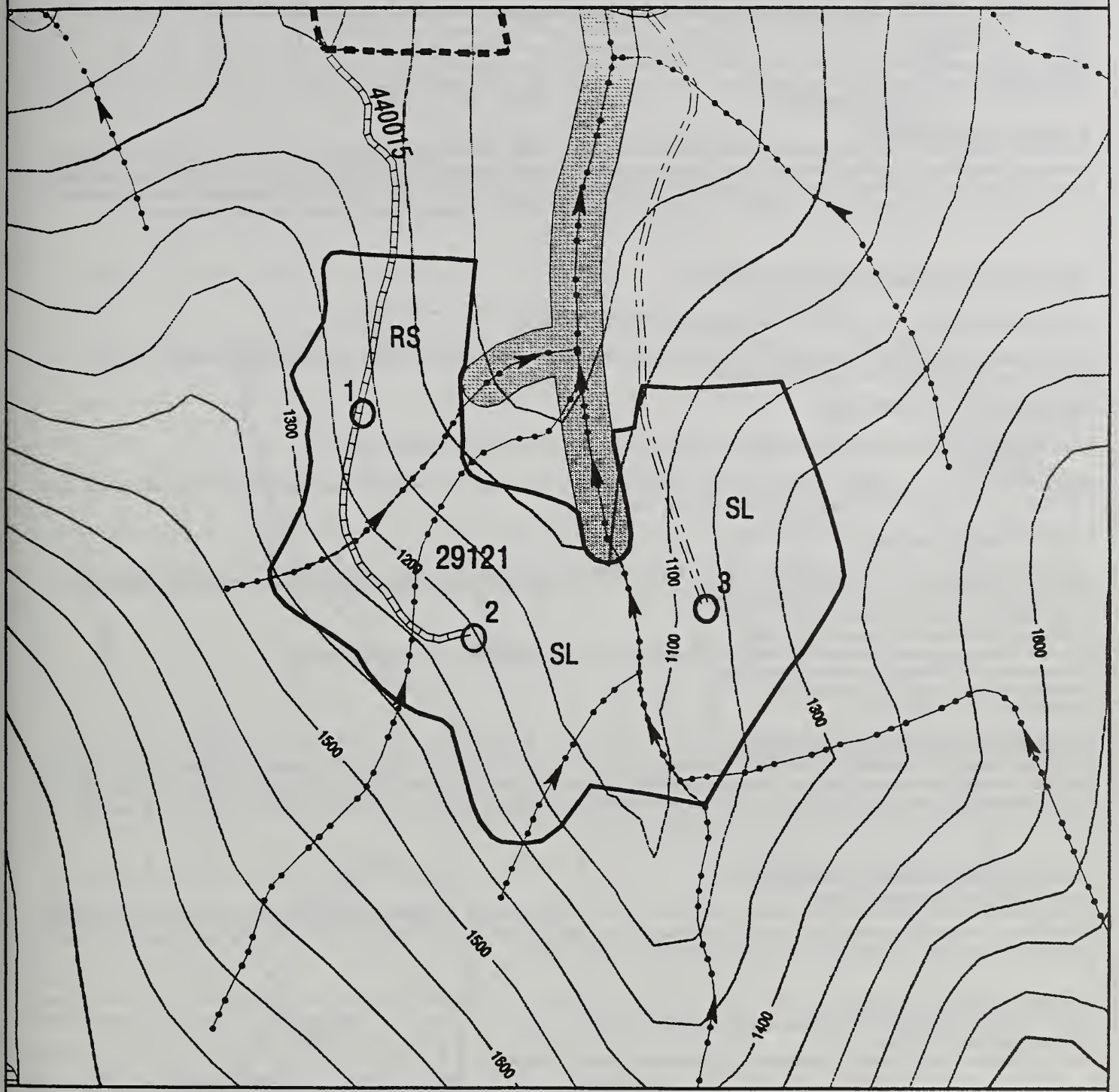
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29121 ALTERNATIVE(S): B D E

ACRES: 79.94 TOTAL NET MBF: 1661.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 203



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29122	MAP:	173	ACRES:	86
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	28			PHOTO #'S:	988-203
						ALTERNATIVE(S):	B, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	0.2	0%	-	-	-	-	-	-	-	-
VC-5	24.2	-	-	-	-	-	-	-	-	-	-
VC-6	37.5	85.9	100%	WH	120-115	65	H	G	-	H	M
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		86.1	100%	-	-	65	H	G	-	H	M

STAND CHARACTERISTICS

Low to upper elevation stand of large sawtimber (VC 6) in the western hemlock series . Defect and mortality are average. Stand structure is functionally even-aged with overstory age 300-350 years. Slopes are moderately steep to steep with two small v-notch class 3 drainages. Soils are moderately well drained. Understory species are primarily blueberry with rusty menziesia, shield fern, and devils club on steeper slopes in the west of unit. Abundant and vigorous WH regeneration from 3 to 30 feet tall is present in most of the unit in canopy gaps from windthrow. Regeneration potential and potential productivity is high. Windthrow is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) No road access; helicopter harvest. (2) Partial harvest feasible.

Visual Resource Management: VQO: Modification, VAC: Intermediate. (2) Partly seen in background at 8 to 10 miles from ferry route; partly seen from North Arm in middleground and in background from cabins at Farragut Bay.

Soils / Geology: (1) Hazard Class IV soils.

Fisheries / Watershed: (1) Class 2 TTRA buffer required in northeast corner of unit. (2) Steep Class 3 v-notches in unit.

Wildlife: (1) Suitable habitat for Canadian goose and red breasted sap sucker. (2) Recommend leaving live reserve trees and snags for vertical structure and other wildlife habitat values. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Conserve vigorous advanced reproduction where feasible.
(6) Minimize sediment yield from fish bearing streams.
(7) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative because : (1) Provides a highest volume and value yield from a stand with low current and high net productivity, (2) Visual, watershed, and wildlife impacts are mitigated, and (3) Stand structure and windthrow potential discourage uneven-aged or intermediate treatments. If clearcut, utility cull that is uneconomic to remove by helicopter, is left in green tree reserves. Advanced reproduction of good vigor will be released. Defer treatment would not regenerate a stand with high regeneration potential and high to very high productivity and would not provide a timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The north and south boundaries were expanded to the VC 6 strata and exclude Hazard Class IV soils. The north boundary buffers a large and unstable Class 3 drainage. d The northeast corner boundary buffers a Class 2 stream and a Class 3 v-notch . West and south boundaries are located as skyline setting boundaries prior to the switch to helicopter harvest system. In general, they follow a vegetation break into marginal VC 4 .

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 and Class 3 v notches
BMP 13.9 Suspended Log Yarding
BMP 13.16 Stream Channel Protection - Directional felling and slash removal from v notches in unit.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and blowdown of reserve trees.
(2) Schedule PCT and favor SS and YC for species diversity and value productivity.

MONITORING PLAN

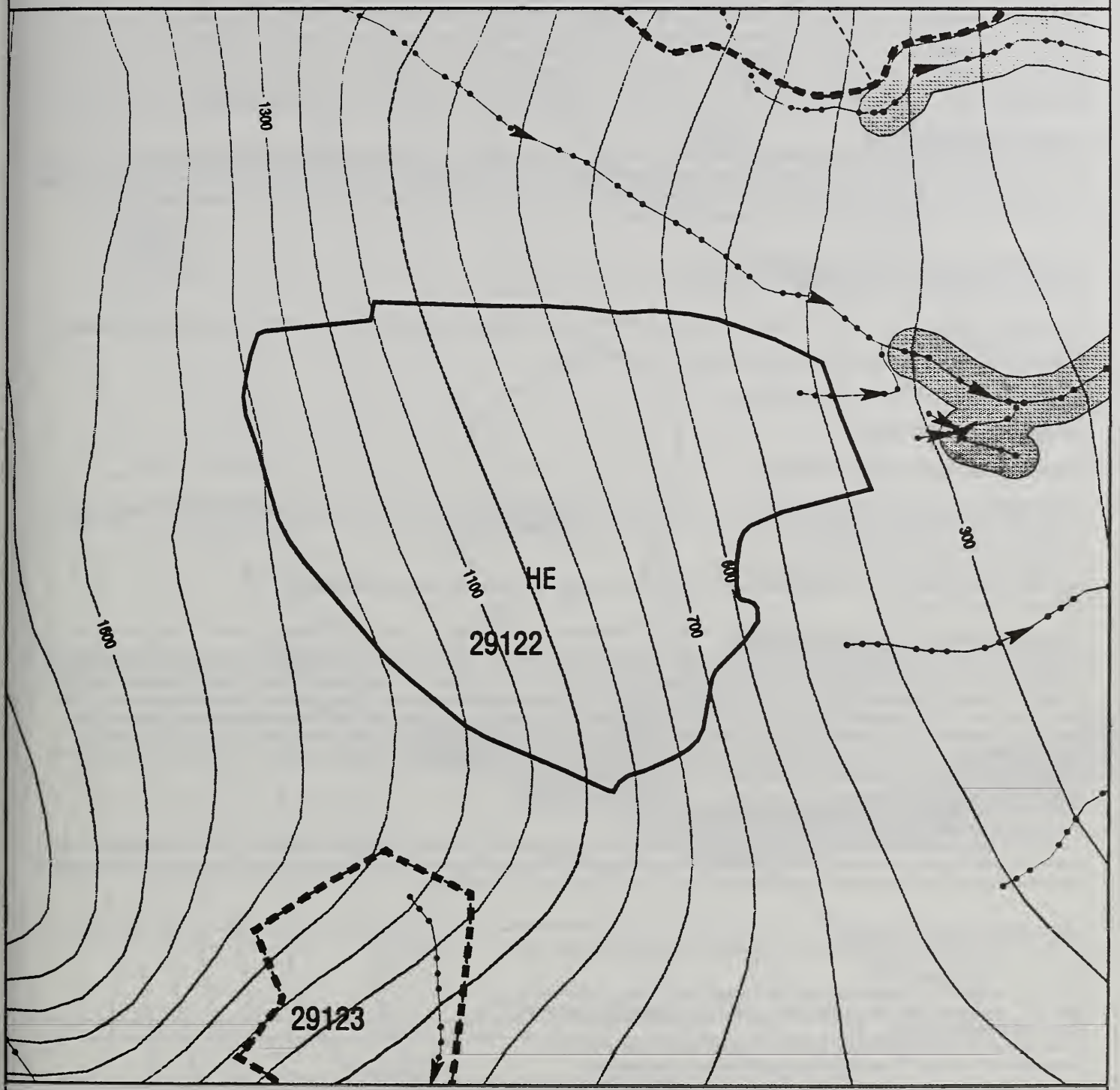
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29122 ALTERNATIVE(S): B D

ACRES: 86.13 TOTAL NET MBF: 2910.8 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 203



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.23:31:41.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29123	MAP:	174	ACRES:	29
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	28			PHOTO #'S:	988-202
						ALTERNATIVE(S):	B, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.3	-	-	-	-	-	-	-	-	-	-
VC-5	24.2	14.2	48%	XC-HC	420-220	55	L	MP	M	M	H
VC-6	37.5	15.1	51%	HC-XC	220-420	60	M	M	H	M	H
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	0.1	0.00	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		29.4	100%	-	-	57	M	M	cedar decline	M	H

STAND CHARACTERISTICS

Mid to upper elevation stand of W. hemlock-yellow cedar and mixed conifer series, volume class 5 and 6, composed of medium to large sawtimber with average to very high defect and mortality; yellow cedar is in chronic decline. Stand structure is functionally even-aged with overstory age 300+ years. Slopes are moderate to steep with one high-gradient class 3 stream; soil drainage is moderate to moderately poor. Understory is blueberry and skunk cabbage. Little advanced conifer regeneration is present; regeneration potential is moderate. Cedar decline is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter because of no road access. (2) Partial harvest feasible.

Visual Resource Management: (1) VQO: Modification. (2) Background 8-10 mile view from ferry route, middle ground view from North Arm, and background view from cabins at Farragut Bay.

Soils / Geology: (1) Excluded Hazard Class IV and low productivity soils from harvest.

Fisheries / Watershed: (1) 100 ft. Class 2 buffer required.

Wildlife: (1) Suitable Mt. Goat habitat.

Cultural / Recreation / Subsistence: No Concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of understocked stand with a diseased, mature overstory for a programmed timber yield.
(2) Timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Suspended Log Yarding.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative because: (1) Provides a high volume yield from a defective stand with high potential and low current net productivity; (2) Reserve tree selection provides large defective hemlock and yellow cedar and Sitka spruce of good phenotype for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, and visual softening of harvest impacts. Logging systems feasibility is good for a heavy partial cut. Clearcut would provide a 5-10% higher timber yield but less regeneration of the higher valued and longer lived species without planting and would not ameliorate the impacts to visual or wildlife habitat resources as well as clearcut with reserves. Shelterwood with reserves, selection, and sanitation salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northeastern and southeastern portions of unit were excluded for low-site volume; east boundary therefore follows transition into low-site. Western setting boundary was expanded to include logging setting further west; west boundary now borders a class 3/2 drainage with buffer. The north boundary is the original logging setting boundary for cable harvest system, and the south boundary was slightly modified to accommodate a class 2 stream buffer.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Designate Water Quality Protection Needs - Class 3 in unit, Class 2 TTRA buffer.
BMP 13.9: Suspended Log Yarding.
BMP 13.5: Protection of Potentially Unstable Areas - Exclude Class IV Soils.
BMP 18.1: Clearcut with Reserves provides habitat diversity, snag retention and recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and blowdown of reserve trees.
(2) Schedule PCT and favor YC and SS for species diversity and value productivity.

MONITORING PLAN

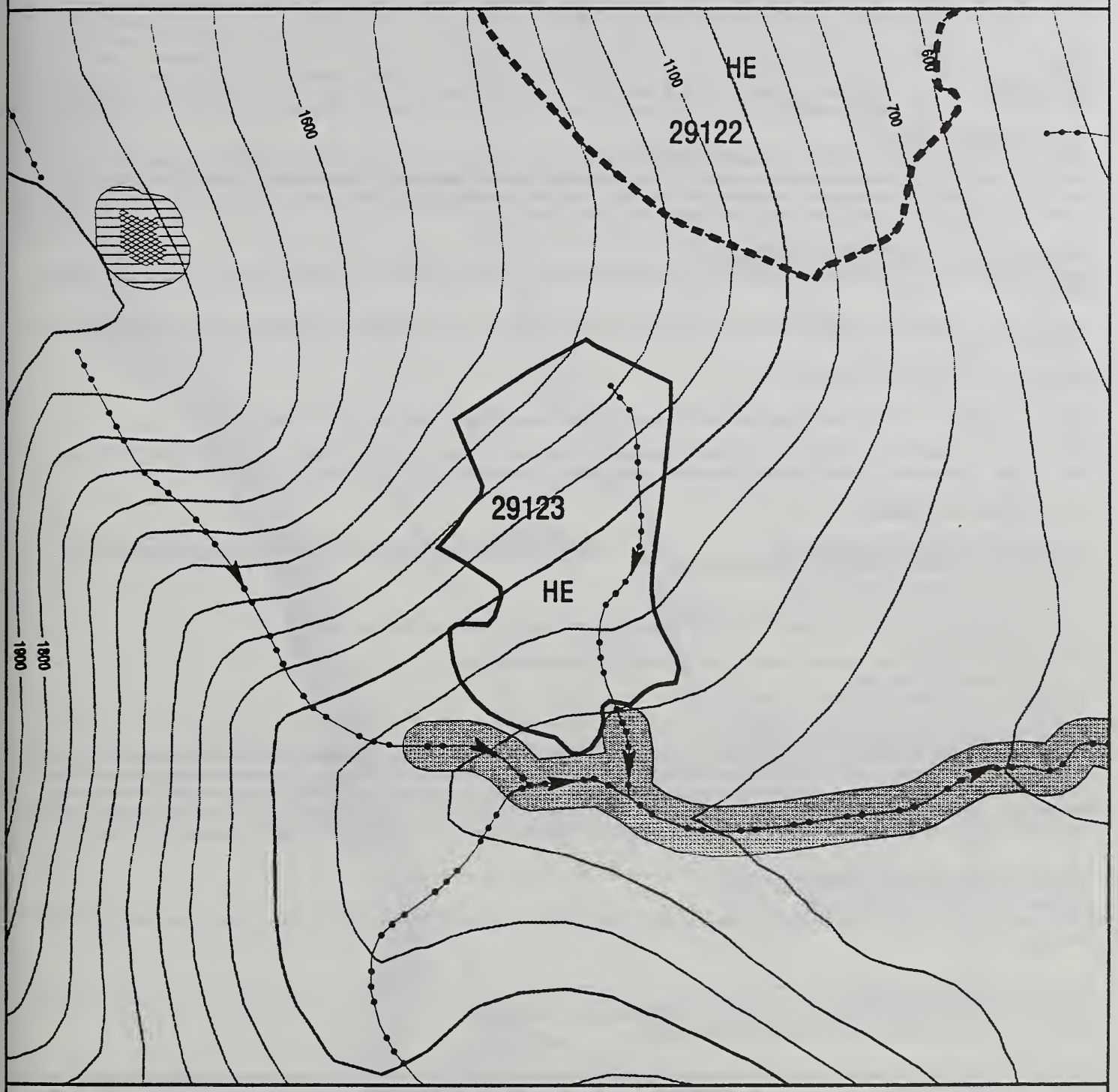
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29123 ALTERNATIVE(S): B D

ACRES: 29.33 TOTAL NET MBF: 512.5 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 202



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

N

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.23:33:04.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29125	MAP:	156	ACRES:	50
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	55			PHOTO #'S:	684-205
						ALTERNATIVE(S):	C. E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	49.9	100%	HC	220-230	50	L	MP	-	M	L
VC-5	24.2	-	-	-	-	-	-	-	-	-	-
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		49.9	100%	-	-	50	L	MP	-	M	L

STAND CHARACTERISTICS

Lower elevation stand of W. hemlock-yellow cedar series with scattered spruce dominants, volume class 4, composed of medium sawtimber with average defect and mortality. Good yellow cedar site. Stand structure is functionally even-aged with overstory age 350+ years with some 250 to 350 western hemlock. Slopes are gentle to moderate with four minor class 3 drainages and soil drainage is moderately poor. Understory is composed of blueberry with skunk cabbage and rusty menziesia. Mixed-species conifer regeneration occupies 20-40% understory cover; regeneration potential is moderate to high.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Running skyline with 3/4 in lines. (2) 4 landings all requiring artificial guyline anchors. (3) Feasible for heavy partial cut but snag retention a safety hazard.

Visual Resource Management: (1) VQO: Modification, VAC: High. (2) Partially seen in background from ferry route at 10 mi., middle ground view from North Arm at 3 mi. (3) Rated visually sensitive.

Soils / Geology: (1) Excluded low productivity soils.

Fisheries / Watershed: (1) No TTRA buffer required because of distance from Class 2 stream course. (2) Four stable class 3 streams split unit.

Wildlife: (1) Suitable habitat for Canadian goose and red breasted sapsucker. (2) Moose with young observed in lake to northwest. (3) Recommend leaving green reserve trees and snags for vertical structure diversity and other wildlife habitat values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Mitigate middleground and background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Exclude low productivity soil.
(6) Design alternative silviculture rx to provide operational demonstrations of adaptive management trials.
(7) Provide a programmed timber yield.
(8) Skyline Yarding with Lateral Yarding Capability settings 3.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative because it meets resource objectives, is an efficient method to harvest the stand and improve productivity and provide for retention of leave trees to soften visual impact, maintain wildlife values, and retain Sitka spruce and yellow cedar seed source. Clearcut and clearcut with reserves would not provide the same degree of habitat modification, ecological/soil functioning, and visual mitigation, but would provide about 10% more timber harvest in this entry. Group selection and sanitation salvage would not provide the same timber yield, would not result in the desired stand structure, and would be less economical. Sanitation salvage is not recommended for logging systems feasibility. Defer treatment would not provide a timber yield and would not regenerate a stand with moderate potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundaries follow the transition border of productive timberland into mixed-conifer low-site and muskeg. The east boundary follows the access road which terminates in the unit.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Designate Water Quality Protection Needs - 50 ft no cut buffers on Class 3 streams in unit.
BMP 18.1: Green culls reserved for snag recruitment and habitat structure.

Forest Productivity Activities:

(1) Planting YC and SS to maintain cedar component and improve volume and value productivity.
(2) Soil mixing and warming from logging disturbance and blowdown of reserve trees.
(3) Schedule PCT and favor YC and SS for species diversity and value productivity.

MONITORING PLAN

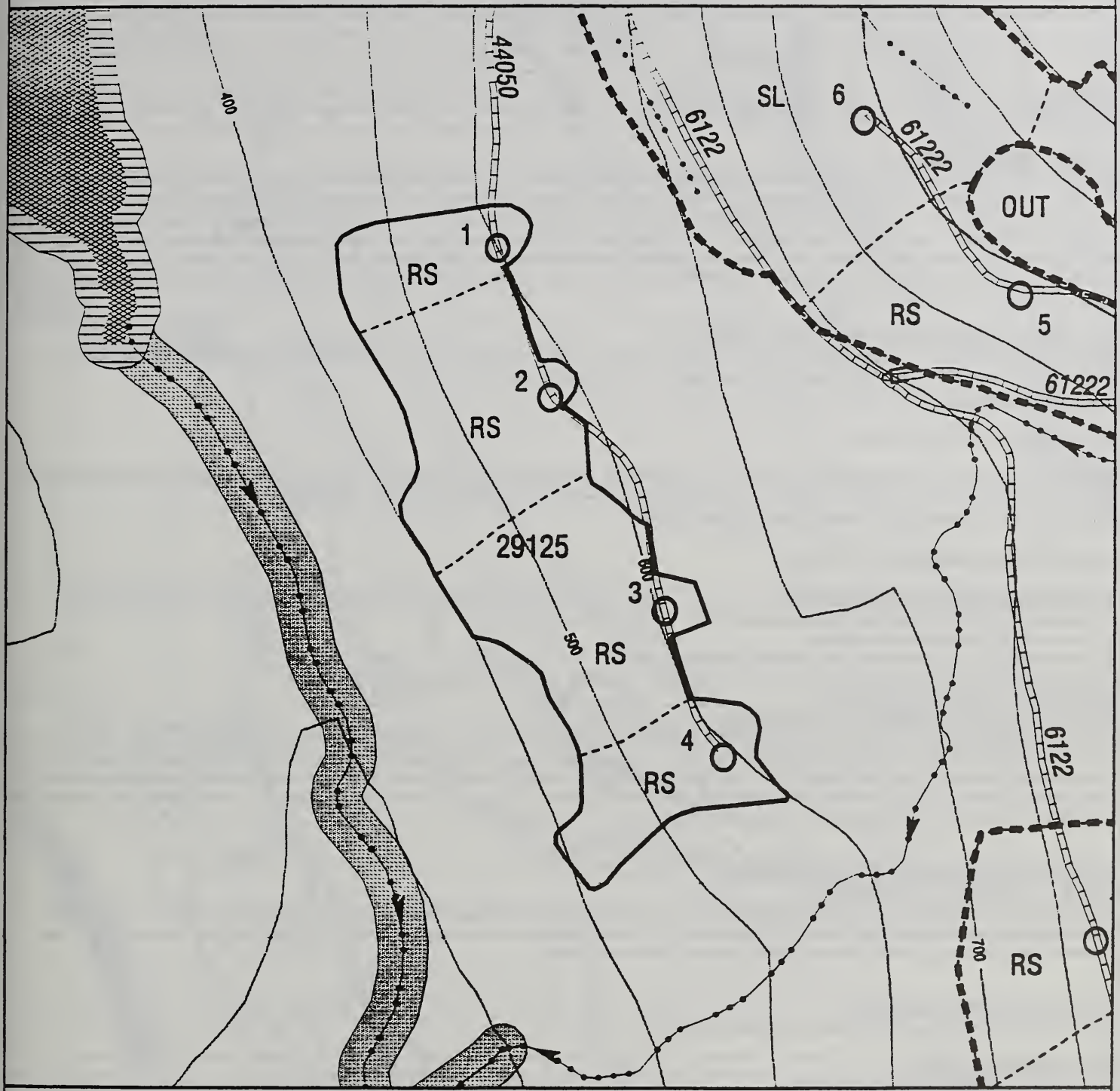
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29125 ALTERNATIVE(S): C E

ACRES: 49.9 TOTAL NET MBF: 644.7 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 205



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

	VCU:	890	UNIT #:	29126	MAP: 145	ACRES:	158
	AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	30		PHOTO #'S:	1088-46
						ALTERNATIVE(S):	C, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	30.7	19%	HC-XC	220-210	50	L	MP	-	M	M
VC-5	24.2	99.7	63%	WH	110-120	60	H	M	-	H	M
VC-6	37.5	27.9	18%	WH	110-120	65	H	M	-	H	M
VC-7	66.2	-	0%	-	-	-	-	-	-	-	-
Low	6.4	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		**158.3**	**100%**	-	-	**59**	**H**	**M**	-	**H**	**M**

STAND CHARACTERISTICS

Mid elevation stand of medium to large sawtimber with moderate to high defect and mortality. The predominant forest series is western hemlock with WH -YC along drainages and WH-YC and MX on flats and in ecotones. Scattered spruce are dominant in the canopy . The muskeg and low productivity island in the center of the stand is excluded from harvest. Stand structure varies from functionally even-aged to uneven-aged with gaps from mortality and blowdown and in the open canopy VC 4. VC 5 & VC 6 occur on the better drained soils of the upper slopes . VC 4 is concentrated on the flatter slopes on the west edge of the unit and bordering the muskeg island. There are 3 apparent age classes in the WH series; > 300 yrs with abundant snags, relatively thrifty 200 to 300 yr WH, and about 20% of growing space occupied by advanced regeneration. Blueberry is common with devil's club on steeper well drained slopes and in drainages and skunk cabbage on poorly drained flats. Potential productivity is fair to good. Windthrow is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Partial harvest feasible on portions of stand; (2) 6 stations of temporary road required; (3) Guyline extensions across muskeg at unit bottom will be required; (4) Tail trees will be required; (5) Snag retention is s safety hazard. (6) skyline logging.

Visual Resource Management: (1) VQO: Modification, VAC: High

Soils / Geology: (1) Soil stability concern.

Fisheries / Watershed: (1) Buffer Class 2 stream in along northwest portion of stand with at least 100 ft buffer. (2) Stream channels are stable and present few concerns; (3) Suggest one end -suspension because of Class 3 running NW through unit, downhill yarding, and several smaller Class 3 streams in unit.

Wildlife: (1) Suitable Canadian goose and red breasted sapsucker habitat.

Cultural / Recreation / Subsistence: No concern.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an over mature stand with a diseased overstory for a programmed timber yield.
(2) Improve timber volume and value productivity.
(3) Exclude Hazard Class 4 soils from harvest because of mass movement risk.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Skyline Yarding with One-End Suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because it would provide a high volume yield from a defective stand with high potential and low current net productivity. Clearcut with reserves and shelterwood with reserves are not feasible for the unit as a whole with cable logging. Reserve trees are likely to blowdown . Group selection would not provide the same yield or subsequent productivity, would increase windthrow risk substantially, and would require helicopter yarding. Feathered edges, areas dropped because of slope instability, and the uncut island will soften a background visual impact and maintain some elements of habitat structure. Defer would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

After field review the unit is the lower areas of Units 29124 and 29126 (139 acres combined) of the paper plan unit pool plus the leave strip in between. The northeast boundary was established at the midslope break into oversteepened (>70%) and potentially unstable slopes. The muskeg in the center of the unit is excluded. The west boundary follows the Class 2 stream buffer and the low productivity transition into muskeg.

Soil, Water, and Wildlife Conservation:

BMP 13.9 Yarding Operations: Skyline Yarding with One end Suspension

Forest Productivity Activities:

(1) Soil warming and mixing from logging disturbance.
(2) If year 3 stocking survey indicates less than 100 well-distributed YC and SS, interplant 100 trees per acre year 4.

MONITORING PLAN

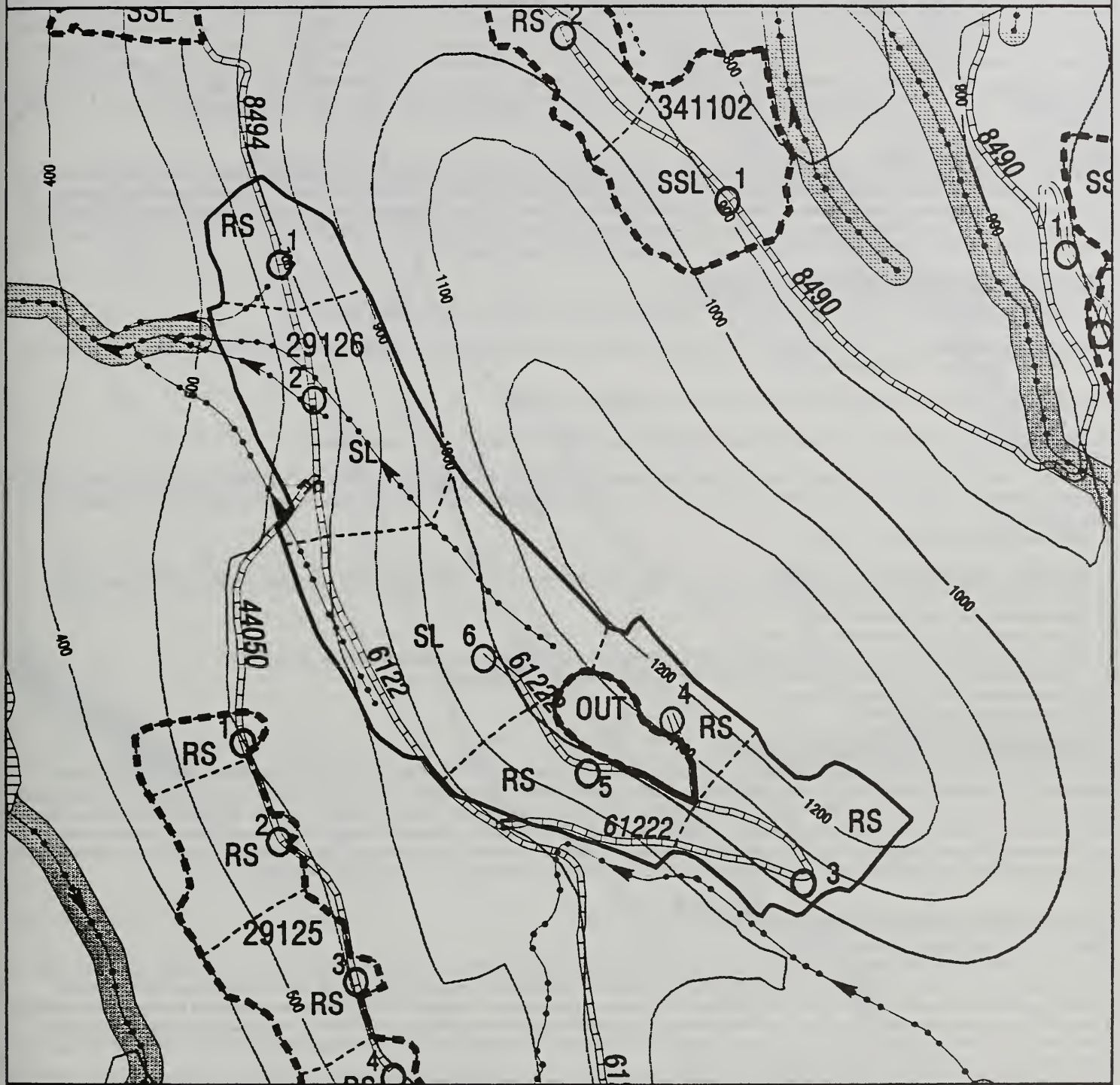
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29126 ALTERNATIVE(S): C E

ACRES: 158.27 TOTAL NET MBF: 3517.4 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 205



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29127	MAP:	166	ACRES:	168
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	30			PHOTO #'S:	684-45,46
						ALTERNATIVE(S):	C, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	66.4	39%	WH	130-120	50	H	MP	M	M	M
VC-5	24.2	101.8	61%	WH	120-130	70	E	MP	H	H	M
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		168.2	100%	-	-	62	E	MP	Windthrow	H	M

STAND CHARACTERISTICS

Mid elevation western hemlock stand of medium and large sawtimber with yellow cedar on unit fringes. The stand is a mosaic of age classes: 350 yr plus, mature 150 to 250 yr; and younger age classes. The older timber is defective, mortality is high, and snags are common. Good WH reproduction in more recent windthrow gaps occupies between 20% to 30% of growing space. Understory vegetation is primarily blueberry . There is a series of v-notches in the unit that make logical setting boundaries. Slope stability is good. Devil's club is present in Class 3 headwalls and skunk cabbage is more abundant in the lower unit. as the slope toes out. Recent windthrow aligned in a north direction is evident. Windthrow is a management concern. Potential productivity is good to excellent.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) partial retention is feasible. (2) Tail trees are required and good choices are readily available.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) However, unit is very sensitive visually because of size. (3) Seen from ferry route in background - 10 miles- and from North Arm in middleground - 3 miles.

Soils / Geology: (1) Field review changed inventoried hazard class 4 to hazard class 3 or better.

Fisheries / Watershed: (1) No Class 1 or 2 adjacent to unit. (2) Protect Class 3 channels in unit to minimize sediment yield.

Wildlife: (1) Northern Goshawk seen in vicinity of unit but no nest was located. (2) Greater yellowleg seen in muskeg near unit. (3) Suitable habitat for Canadian goose and red breasted sapsucker. (4) Recommend leave green reserve trees and snags for vertical structure diversity and other wildlife habitat values. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of a overmature stand with a decadent overstory .
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Design alternative silviculture systems to provide operational demonstrations of adaptive management trials.
(6) Minimize sediment yield to fish bearing streams.
(7) Provide a programmed timber yield.
(8) Skyline Yarding with One-End Suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut settings 1 & 2; Clearcut w/Reserves settings 3 & 4 ; and Shelterwood w/ Reserves settings 5 & 6. This harvest pattern will phase tree retention into a windfirm boundary from the prevailing wind with the expectation that windthrow will impact the reserves. The adaptive management trial design is to test windthrow and regeneration patterns including soil productivity renewal from windthrow as theorized by some researchers. Plant association, forest series, aspect, soil drainage, and slope are relatively consistent in the unit. Visual impact should be ameliorated by this harvest pattern. Group selection and sanitation salvage are not feasible harvest methods without using costly helicopter yarding, and would require more frequent entries into the stand. Stand regeneration would be marginal and net productivity would likely decrease because of extreme windthrow. Defer would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Upper boundary to the east was determined by what could be reached with a yarder from the road location, availability of skyline anchors, and the objective of leaving an uncut muskeg fringe. This boundary would be an excellent helicopter salvage area in future projects because of the yellow cedar component in the ecotone. The south boundary was located at the north boundary of unit 29129 (dropped) as proposed in the paper plan. The west boundary follows the setting break to timber located tributary to a proposed road parallel and lower on the slope. For most of the unit, this coincides with a relatively distinct break in forest series and plant associations. Units 29127, 29128, and 29129 of the paper plan (272 acres) were reconfigured into 29127 as field located in order to reduce habitat fragmentation, reduce windthrow risk & impact, and to reduce the amount of road constructed at this entry by 1.5?? miles.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Yarding Operations: Skyline Yarding with One End Suspension
BMP 13.3: Designate Water Quality Protection Needs
BMP 13.19: Reforestation--Cluster leave trees in areas of advanced reproduction.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and projected blowdown of reserve trees.
(2) Retention of patches of advanced regeneration.
(3) Schedule precommercial thinning.

MONITORING PLAN

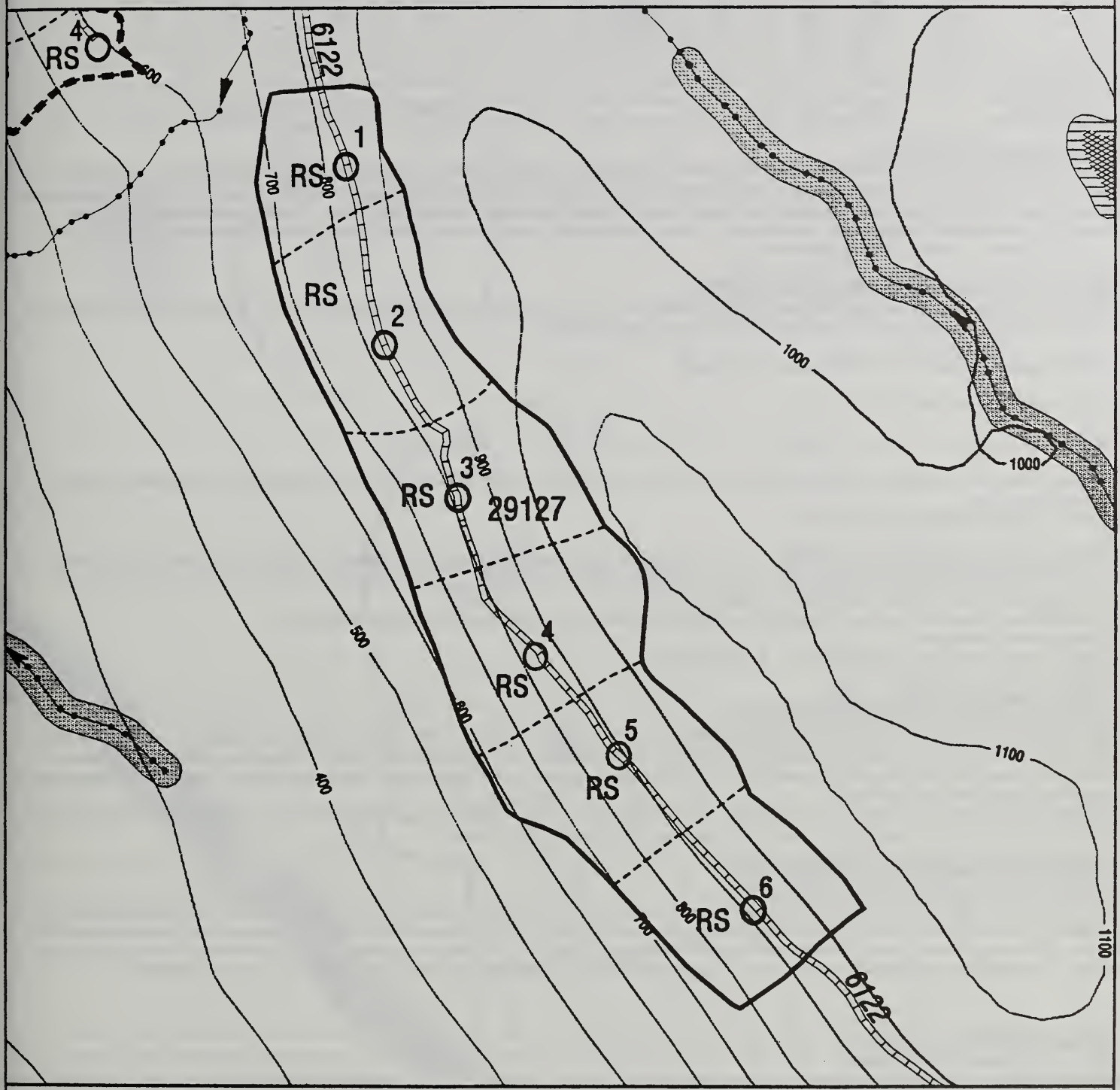
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29127 ALTERNATIVE(S): C E

ACRES: 168.2 TOTAL NET MBF: 3080 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 30 ROLL NO.: 1088 PRINT NO.: 45



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

08/21/95.17:27:27.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	29198	MAP:	118	ACRES:	29
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-181
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	-	-	-	-	-	-	-	-	-	-
VC-5	24.2	10.2	36%	WH	130-110	55	H	MP	H	M	M
VC-6	37.5	18.5	64%	WH	110-120	65	H	M	H	H	H
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		28.7	100%	-	-	61	H	M	windthrow	H	H

STAND CHARACTERISTICS

Lower to mid elevation stand of western hemlock series, volume classes 5 and 6, composed of large sawtimber with average to high defect and mortality. Stand structure is a mosaic of 2-storied and uneven-aged, with overstory age 300-450 years. Slopes are concave from gentle to very steep with rising elevation, dissected by numerous class 3 drainages; soil drainage is moderate and moderately poor. Understory is blueberry with a complement of skunk cabbage, shield fern, and devils club by plant association, 40-90% understory cover. Advanced WH regeneration is present in 10-30% of unit under canopy gaps created by past windthrow, with variable vigor. Windthrow is a predominant management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Running Skyline with 7/8" line proposed. (2) Downhill yarding, partial cut not feasible.

Visual Resource Management: (1) VQO: Modification; VAC High; (2) Not Seen.

Soils / Geology: (1) Unstable V-notches.

Fisheries / Watershed: (1) Class 2 stream immediately downslope. (2) High gradient and unstable Class 3 V-notches are avoided.

Wildlife: (1) Marbled Murrelet and N. Goshawk surveys were negative. (2) Recommend leaving green reserve trees and snags for vertical structure and other wildlife habitat values. (3) Suspect red tail hawk nest was not found. (4) Canadian goose seen in beaver ponds east of unit. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No Concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of understocked stand with a decadent, mature overstory.
(2) Timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Provide a programmed timber yield.
(6) Skyline Yarding with One-End Suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut was the selected alternative because partial harvest is of poor feasibility due to downhill yarding. Blowdown of reserve trees would be likely in a clearcut with reserves, and there would be no conflict with visuals or need to enhance soil mixing to forestall podsol formation over and above that provided by clearcut. Incidental reserve trees and snags selected in safe, windfirm locations will provide vertical structural habitats for wildlife. Clearcut is the most optimal method for timber yield and subsequent productivity while still meeting resource objectives. Defer would not provide a timber yield and not replace a decadent stand with high growth potential of a young vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

North and south boundaries buffer large, high-gradient, and unstable class 3 v-notches. The east boundary follows the road location with timber east of the road left to buffer Class 2 streams The west boundary is a logical setting boundary with future entries located upslope. The unit was part of 29101 as originally conceived, and the leave strip between 29198 and 29101 deleted because of soil instability. Some blowdown is expected in this area.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 buffer and Class 3 streams excluded but bordering on unit.
BMP 13.5 Protection of Potentially Unstable Areas - deleted area separating 29198 from 29101.
BMP 13.9 Suspend log yarding - One end suspension to minimize disturbance.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Schedule PCT and favor SS.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 29198 ALTERNATIVE(S): B C D E

ACRES: 28.71 TOTAL NET MBF: 849.6 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 182



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.22:10:01.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 81 UNIT #: 311140 MAP#: 1 ACRES: 83

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 50 PHOTO #'S: 784-45

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	43	52%	XC	510	40	M	M	-	M	M
VC-5	25.8	40	48%	S-MH	395-510	40	M	M	-	H	M
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		83	100%	-	-	40	M	M	-	M	M

STAND CHARACTERISTICS

Upper-slope stand, moderately steep, on general southerly aspect. Mountain hemlock series with spruce component. A Class III stream in a steep V-notch bisects the south unit boundary. Small muskegs border higher elevations, and also occur in scattered locations within the unit. Stand structure is functionally even-aged, with closed canopy over most of the unit. Defect is high in Volume Class 4 and adjacent to muskegs. Little evidence of windthrow despite southerly exposure. Overstory age is generally 300 years. Understory vegetation includes dense Vaccinium, with ladyfern, skunk cabbage, and devil's club. The area has a high regeneration potential.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Cable yarding for all settings. Settings are located so that yarding will be away from major muskegs and stream courses. Two temporary spurs of moderate grade/construction.

Visual Resource Management: VQO is Partial Retention, which will be met by inclusion of reserves in some localities, and by feathering clearcut edges. The VAC is Intermediate to High. Unit will be screened by topography and remaining trees in foreground.

Soils / Geology: No concerns recorded.

Fisheries / Watershed: No concerns noted.

Wildlife: Recommend retaining reserve trees and snags for structural diversity. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.
(6) Area will be split-yarded away from Class 3 stream.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut and clearcut with reserves best meet integrated resource objectives. Reasons: (1) Converts unit to vigorous young stand with remnant biological structures. Quality, type, and amount of regen will be controlled through PCT and supplemental. planting if needed. Reserve trees in clusters or groups will provide structural diversity and ecological functions and still be operationally feasible. (2) Approx. 95% of the available volume will be harvested. (3) Unit design and silv. treatment will meet the VQO of Modification. (4) Fish habitats on and adjacent to unit will be maintained by protection of the V-notches and location of cable yarding settings. (5) Site quality will be maintained or improved. Warmer soil will increase biol. activity and increase decomposition of excess organic material. Some reserve trees will blow down, creating pit-and-mound microtopography and mixing mineral and organic soil layers and potentially reducing podzolization.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit boundary was determined by timber type characteristics and logical yarding limits. Internal boundaries and buffers were designed to protect the Class-3 stream and major V-notches.

Soil, Water, and Wildlife Conservation:

BMP 13.16: Avoid yarding across V-notches.
BMP 13.3: TTRA buffers on stream.
BMP 13.2: Timber harvest design secures water quality, soil productivity, and minimizes erosion.
BMP 18.1: Snags retained for cavity nesting.

Forest Productivity Activities:

1. Soil mixing and warming from logging disturbance and projected blowdown of reserve trees.
2. Natural regeneration of Sitka spruce by retention of seed trees on unit edges and creation of favorable mineral seedbed.

MONITORING PLAN

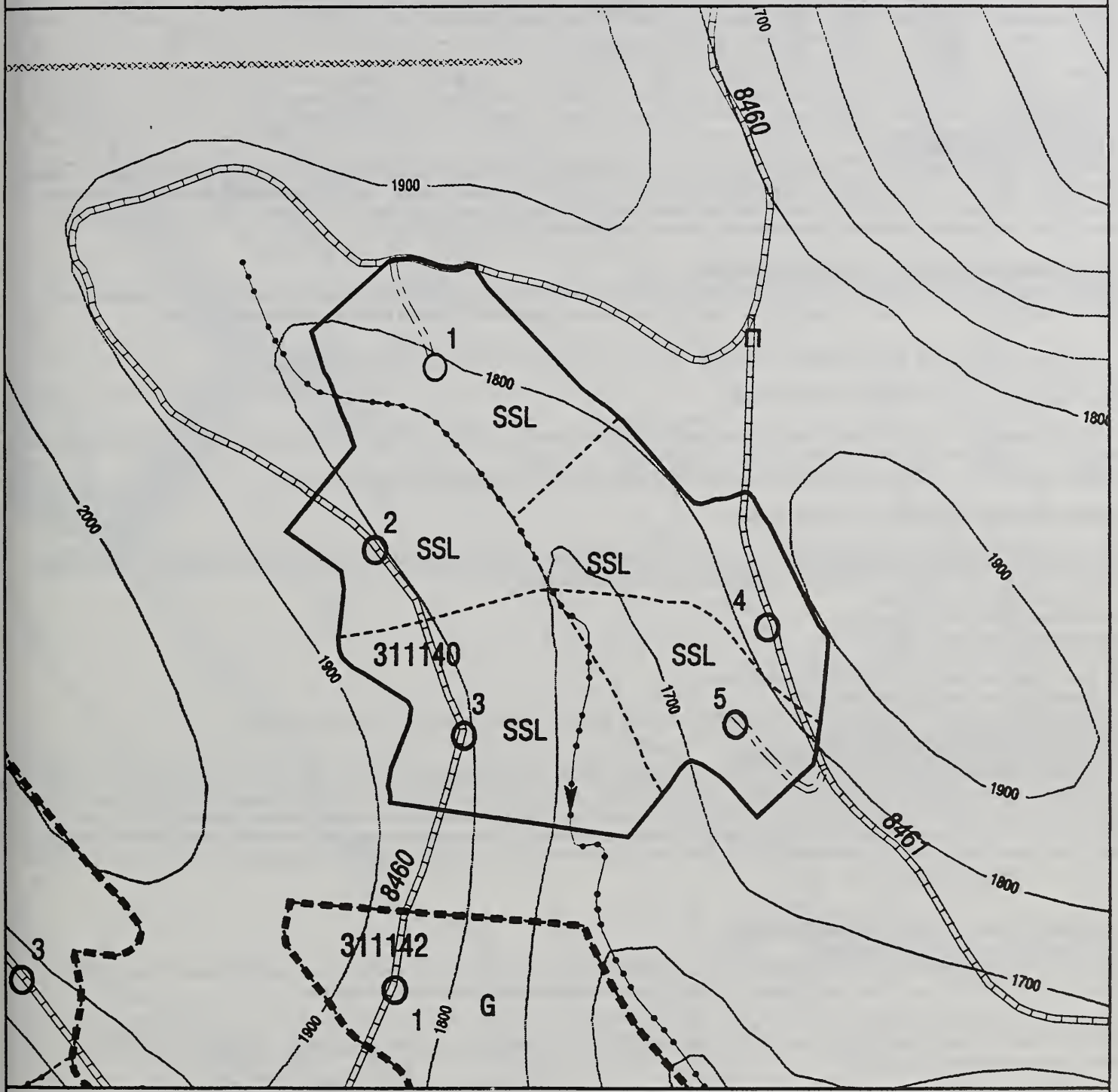
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 311140 ALTERNATIVE(S): C

ACRES: 82.86 TOTAL NET MBF: 1254.8 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 784 PRINT NO.: 45



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 81 | UNIT #: 311141 | MAP#: 14 | ACRES: 83

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 50 | PHOTO #'S: 784-44 | ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	63	76%	XC-S	510-390	45	M	M	-	M	H
VC-5	25.8	2	2%	-	-	-	-	-	-	-	-
VC-6	32.8	18	22%	WH-XC	120-510	55	M	M	-	H	H
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		83	100%	-	-	46	M	M	-	H	H

STAND CHARACTERISTICS

Upper to mid-slope unit, moderately steep, on general southwest aspect. Mosaic of functionally even-aged overmature mountain hemlock and western hemlock with scattered Sitka spruce component. A Class II stream in a V-notch borders the west unit boundary. Small muskeg inclusions. Stand structure is functionally even-aged, with closed canopy over most of the unit. Defect is high in mountain hemlock. Little evidence of windthrow. Overstory age is generally 350 years and older. Understory vegetation generally open, with low Vaccinium and devils club in drainages. Scattered conifer advance growth in poor condition.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Significant amount of downhill yarding will be need. Retention of snags within unit is serious safety concern. Partial cutting feasible; skyline extension across Class 3 stream needed for suspension. Tail Trees required. Temporary spurs required, including switchback for uphill yarding portion.

Visual Resource Management: VQO is Modification. Area has a Low VAC. Unit is viewed from oblique angle, folded into topography.

Soils / Geology: Boundary readjusted to avoid Class IV soils.

Fisheries / Watershed: The Class 3 stream on west boundary needs to be buffered. Stream is deeply incised. V-notches perpendicular to stream; recommend split yarding to protect. This stream is now outside of unit where the concerns were located.

Wildlife: Need to retain reserve trees and snags for habitat and structural diversity. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns identified.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.
(6) Skyline system prescribed, with split yarding at major V-notches.
(7) Suitable for partial cutting on uphill yarding portion.
(8) Will need to relax system in upslope areas to the extent feasible to break up litter layer and prepared seedbed for natural regeneration.
(9) Skyline extensions required across main stream.

RATIONALE FOR ALTERNATIVE SELECTION

Combination of clearcutting and clearcutting with reserves best meets integrated resource objectives. Reasons: (1) Converts unit to a more vigorous young stand. Quality, type, and amount of regen will be controlled through precomm. thinning and supplemental. planting if needed. Reserve trees in clusters or groups will provide structural diversity and ecological functions. (2) Approx. 95% of the net volume available will be harvested. (3) Unit design and location, as well as silv. treatment, will allow the VQO of Mod. to be met. (4) Fish habitats will be maintained by buffering the Class II stream and protecting V-notches. (5) Site quality will be maintained or improved. Warmer soil will increase biological activity and increase decomposition of excess organic material. Many reserve trees will blow down, creating pit-and-mound microtopography and mixing mineral and organic soil layers and potentially reducing podzolization.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit boundary was determined by landform, drainage pattern, and vegetation types. The unit was located entirely on the east side of the Class 3 stream to avoid negative impacts to the fisheries resource. Settings were dropped and unit boundaries were adjusted to eliminate areas with unstable soils.

Soil, Water, and Wildlife Conservation:

BMP 13.16, BMP 13.5: Avoid yarding across V-notches. Unit boundaries have been altered to eliminate areas with high risk of mass movement in Soil Class 4 areas.
BMP 12.6: Unit moved away from stream.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and projected blowdown of reserve trees. Natural regeneration of Sitka spruce by retention of seed trees on unit edges[and relatively windfirm locations within unit. Supplemental reforestation of scarce species to increase production and diversity of successor stand.

MONITORING PLAN

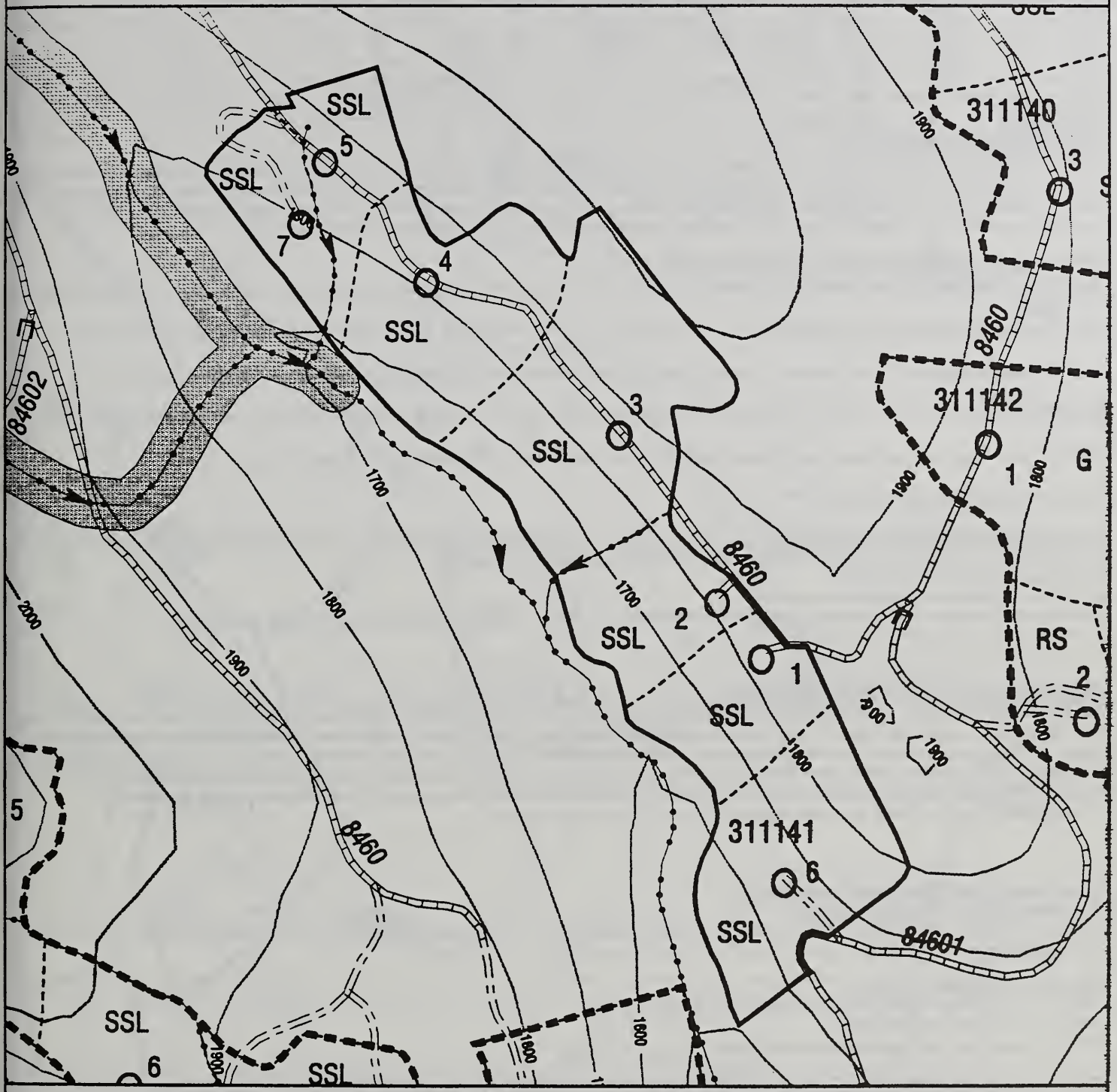
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 311141 ALTERNATIVE(S): C

ACRES: 83.43 TOTAL NET MBF: 1264.2 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 784 PRINT NO.: 44



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 81 | UNIT #: 311142 | MAP# 4 | ACRES: 49

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 50 | PHOTO #'S: 784-44 | ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	3	7%	MH	510	45	M	MP	-	M	M
VC-5	25.8	14	29%	MH-S	510-390	55	H	M	-	H	M
VC-6	32.8	32	64%	MH-S	510-390	60	H	G	-	H	M
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**49**	**100%**	-	-	**58**	**H**	**G**	-	**H**	**M**

STAND CHARACTERISTICS

Mid-slope unit, moderately steep, on east aspect. Functionally even-aged overmature mountain hemlock and western hemlock with scattered Sitka spruce component. A Class II stream in a V-notch borders the east unit boundary (formerly bisected unit before boundary adjustment). Defect is high in mountain hemlock. Some recent windthrow, with high potential for windthrow after stand is exposed. Overstory age is generally 350 years and older. Understory vegetation generally open, with low Vaccinium. Scattered conifer advance growth in poor condition. The area has a high regeneration potential and a high overall productivity.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline extension across stream on east boundary will be needed to obtain log suspension. Snag retention is safety issue. 900-foot temporary road is required.

Visual Resource Management: VQO is Modification; VAC is Intermediate. No unusual concerns noted. Unit is viewed from oblique angle, folded into topography.

Soils / Geology: Moderate risk of mass movement. Most of soil failure potential associated with major V-notch. This area has been avoided.

Fisheries / Watershed: Protect V-notches during logging. Retain buffer along Class 3 stream. Stream was reclassified from Class 2 to Class 3 following field review.

Wildlife: Retain snags and reserve trees where possible for habitat structural diversity. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: None noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of understocked stand with a diseased, mature overstory for a programmed timber yield.
(2) Timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Skyline extensions required across main creek.

RATIONALE FOR ALTERNATIVE SELECTION

Combination of clearcutting and clearcutting with reserves best meets integrated resource objectives. Reasons: (1) Converts unit to a more vigorous young stand. Quality, type, and amount of regen will be controlled through precomm. thinning and supplemental. planting if needed. Reserve trees in clusters or groups will provide structural diversity and ecological functions. (2) More than 90% of the net volume available will be harvested. (3) Unit design and location, as well as silv. treatment, will allow the VQO of Mod. to be met. (4) Fish habitats will be maintained by buffering the Class 3 stream and protecting V-notches. (5) Site quality will be maintained or improved. Warmer soil will increase biological activity and increase decomposition of excess organic material. Many reserve trees will blow down, creating pit-and-mound microtopography and mixing mineral and organic soil layers and potentially reducing podzolization.

Description of Unit Boundary Determination:

Description of Unit Boundary Determination:

The unit boundary was determined by landform, drainage pattern, and vegetation types. The unit boundary was relocated entirely on the west side of the Class 3 stream to avoid negative impacts to the fisheries resource and to eliminate areas with unstable soils.

Soil, Water, and Wildlife Conservation:

BMP 13.16:Avoid yarding across V-notches. Protect buffer along Class 3 stream.
BMP 13.3, 13.2: Unit will be uphill-yarded.
BMP 18.1: Reserve tree and snag retention for cavity nesters.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and projected blowdown of reserve trees. Natural regeneration of Sitka spruce by retention of seed trees on unit edges[and relatively windfirm locations within unit. Supplemental reforestation of scarce species to increase production and diversity of successor stand.

MONITORING PLAN

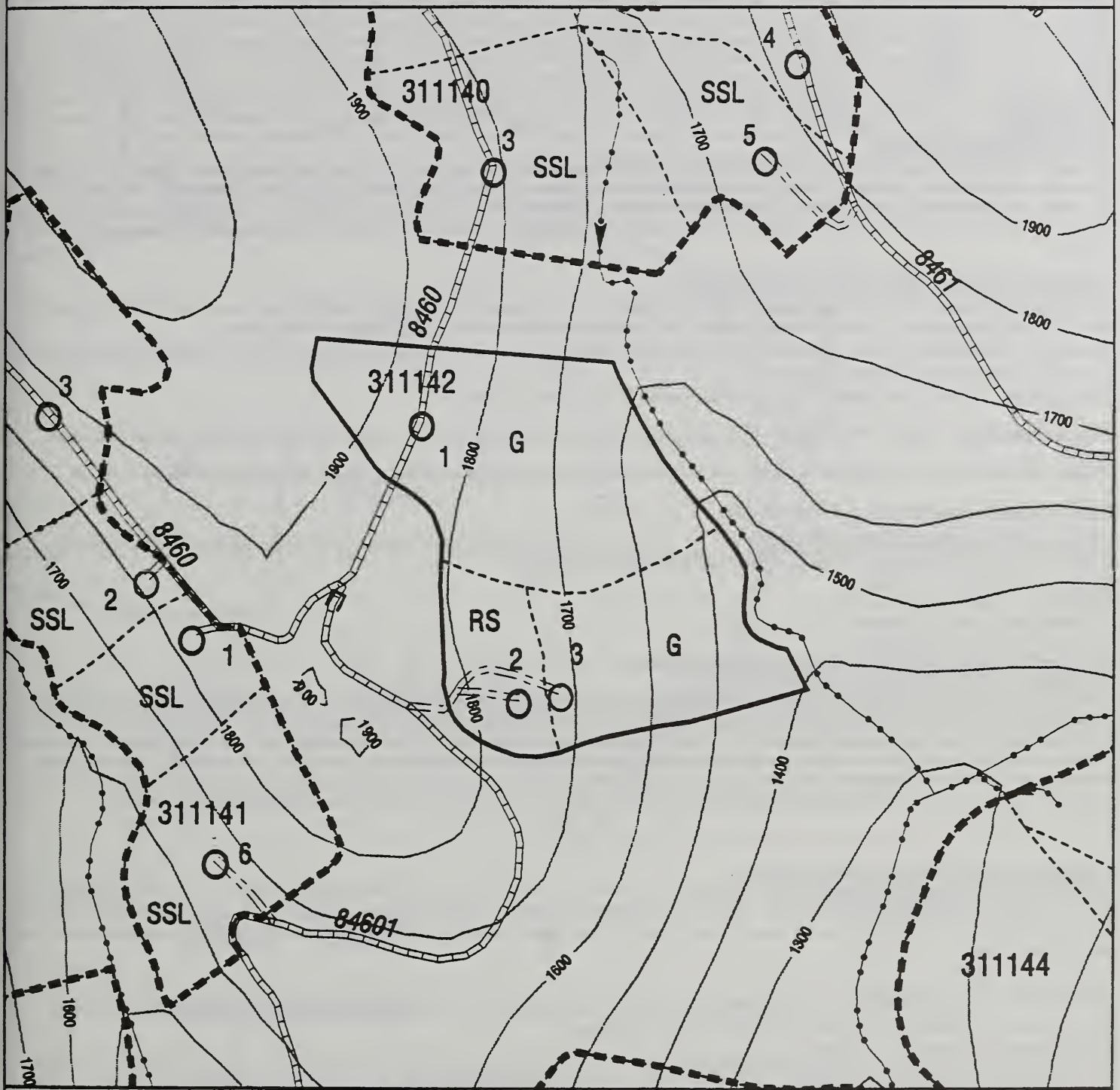
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 311142 ALTERNATIVE(S): C

ACRES: 49.28 TOTAL NET MBF: 1247.6 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 784 PRINT NO.: 44



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 81 UNIT #: 311144 MAP# 6 ACRES: 93

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 50 PHOTO #'S: 784-43

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc.(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	-	-	-	-	-	-	-	-	-	-
VC-5	25.8	24	26%	MH	570-510	50	M	M	-	H	L
VC-6	32.8	67	71%	MH	570-510	60	M	M	-	H	L
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low -	5.0	3	3%	MH	510	35	L	P	-	M	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		93	100%	-	-	56	M	M	-	H	L

STAND CHARACTERISTICS

Mid-slope unit, moderately steep, on NW to SW aspect. A Class 2 stream in a V-notch borders the west unit boundary. Mountain hemlock series. Functionally even-aged overmature mountain hemlock and western hemlock with scattered Sitka spruce component. Productive site, mostly Vol. Class 6 and 5, well stocked. Average defect. Small area of low site adjacent to stream in north part of unit has been excluded. Little evidence of recent windthrow; moderate risk of windthrow following harvest. Overstory age is generally 350 years and older. Understory vegetation generally open, with low Vaccinium and devils club in drainages. Scattered conifer advance growth in poor condition.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Suitable for heavy partial cut. Split yarding needed on Class 3 stream on NE corner of unit. Skyline extensions across Class 3 stream on west side of unit. Landing and guyline anchors will be needed outside the unit. Multiple stump tailholds required. Snag retention is a safety issue.

Visual Resource Management: Area is topographically screened from view as seen from the water. No special visual concerns. VQO of Modification would be met by any treatment alternatives considered in this prescription.

Soils / Geology: Low risk for mass movement. Unit appears to be stable. Soil is generally well-drained.

Fisheries / Watershed: Protection of the Class 3 stream on the west unit boundary will mitigate downstream impacts on fisheries and watershed. These areas were avoided.

Wildlife: Retention of some undisturbed timber islands, snags, and other inclusions would benefit habitat diversity. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns identified.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.
(6) Skyline extensions will be needed across the creek to the west of the unit.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves best meets integrated resource objectives. Rationale: (1) Converts unit to more vigorous young stand. (2) Approx. 95% of net volume available will be harvested, only about 5% less than clearcutting. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by buffering Class 3 stream and protecting V-notches. (5) Site quality will be maintained or improved, due to increased soil functioning. Reserve tree selection provides large defective hemlock and spruce for vertical diversity and cavity nesting habitat, as well as seed sources for higher value timber species. Reserve trees in clusters or groups will provide structural diversity and ecological functions. (6) Logging systems feasibility is good for a heavy partial cut. Selected alternative meets all integrated resource objectives. Note that in some portions of the unit, the reserve trees may actually be at a density and arrangement to be classed as shelterwood with reserves.

Description of Unit Boundary Determination:

Description of Unit Boundary Determination:

The west boundary follows the buffered Class 3 stream. On the north, the unit boundary follows the major timber type and excludes a low-site bench above the stream. The remaining boundaries were determined by considering road location, timber type, and logging setting. In addition, the unit shape was configured to avoid narrowing that would tend to accelerate winds.

Soil, Water, and Wildlife Conservation:

BMP 13.2, 13.2, 13.19: Uphill yarding will minimize potential for erosion. Yarding will be well-away from the Class 2 stream. To the extent feasible, ground-yard logs to expose mineral soil for spruce regeneration and to mix mineral soil with organic layers.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and projected blowdown of reserve trees will result in increased soil biological activity and decomposition rate, potentially increasing productivity. Natural regeneration of Sitka spruce by retention of seed trees on unit edges and relatively windfirm locations within unit.

MONITORING PLAN

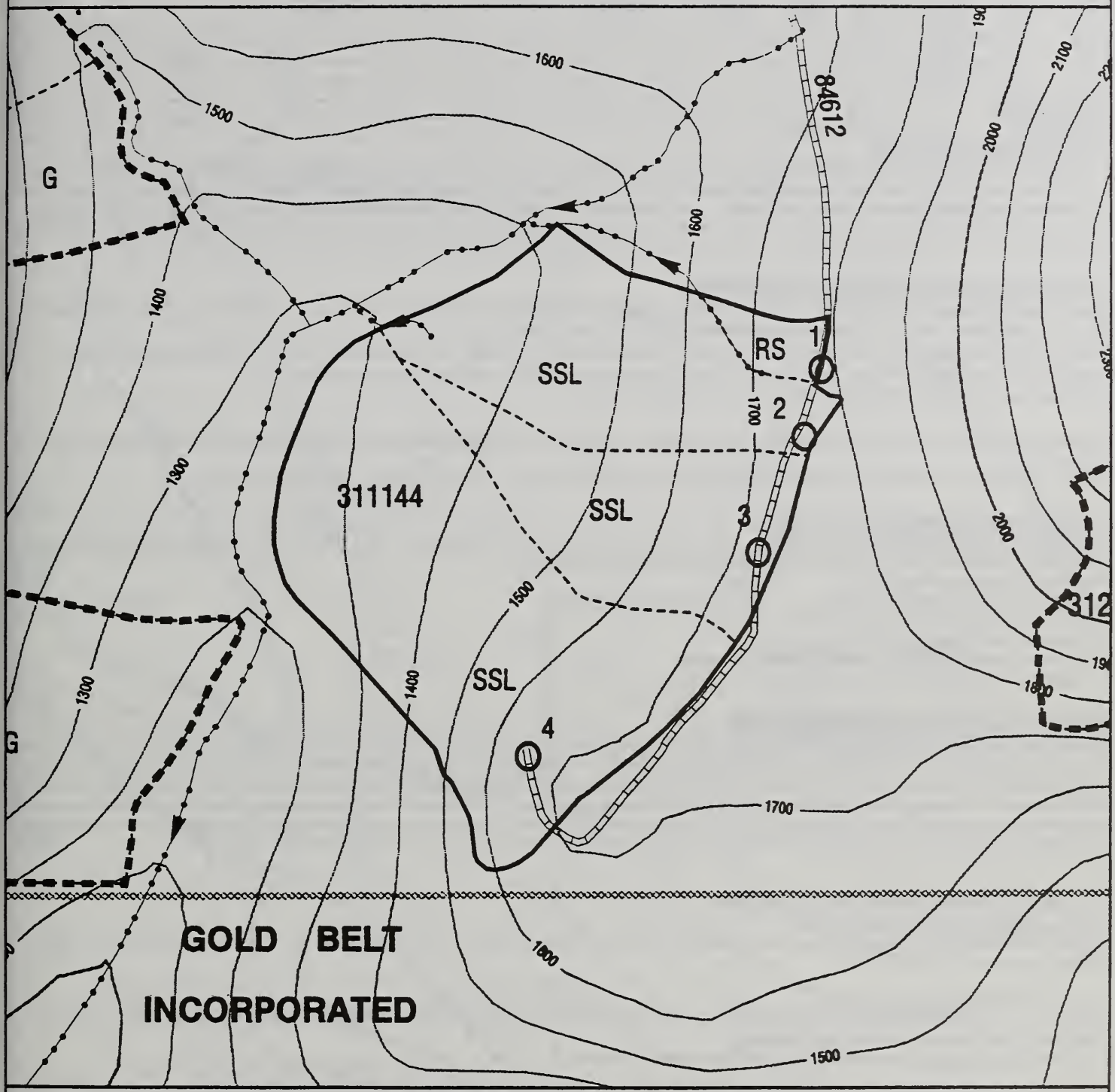
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 311144 ALTERNATIVE(S): C D

ACRES: 93.39 TOTAL NET MBF: 2429 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 784 PRINT NO.: 43



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/22/95.10:45:16.Tue

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 81 UNIT #: 311145 MAP# 12 ACRES: 56

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 50 PHOTO #'S: 784-43

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	55	98%	WH	130-110	50	H	MP	-	M	M
VC-5	25.8	0	1%	-	-	-	-	-	-	-	-
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	1	1%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		56	100%	-	-	49	H	MP	-	M	M

STAND CHARACTERISTICS

Mid-slope unit, moderately steep, on general SE aspect. Class 2 streams border the unit on the east and west, and join just south of the unit boundary. Numerous small streams, many with V-notches, drain to the eastern Class 2 stream. A major V-notch lies within the north fringe of the unit. No muskegs or bogs are found in the unit, but soils are generally poorly drained. Western hemlock forest series; western hemlock/blueberry/skunk cabbage plant association most common. Multi-aged overmature (350+) western hemlock, mountain hemlock, and scattered Sitka spruce. Low site productivity, predominantly Vol. Class 4. Highly defective stand, esp. mountain hemlock. Little current windthrow, but high potential due to stand exposure to SE aspect. Scattered conifer advance growth in good condition. Shrub cover 70-90%.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Heavy partial cut is feasible. One-end suspension needed where crossing major V-notches. Skyline extensions across creek to SE required. Temporary road required, with 15% adverse grade, on wet site. Snag retention is safety issue.

Visual Resource Management: Area is topographically screened from view as seen from the water. VQO of Modification would be met by any treatment alternatives considered in this prescription. Retention of green trees and feathering edges would provide transition from existing heavy cutting.

Soils / Geology: Moderate risk for mass movement. Unit appears to be stable.

Fisheries / Watershed: Protection of the Class 3 streams on east and west unit boundaries needed to mitigate impacts on fisheries and watershed. These areas are now outside unit.

Wildlife: Retention of green trees and snags would help to maintain habitat structural diversity. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: None noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.
(6) Yarding across major V-notches should be one-end suspension.
(7) Skyline extensions across creek to SE required.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves best meets integrated resource objectives. Rationale: (1) Converts unit to more vigorous young stand. (2) Approx. 95% of net volume available will be harvested, only about 5% less than clearcutting. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by buffering Class 2 streams and protecting V-notches. (5) Site quality will be maintained or improved, due to increased soil functioning. Reserve tree selection provides large defective hemlock and spruce for vertical diversity and cavity nesting habitat, as well as seed sources for higher value timber species. Reserve trees in clusters or groups will provide structural diversity and ecological functions. (6) Logging systems feasibility is good for a heavy partial cut. Shelterwood with reserves would be potential alternative, but increased windthrow potential and logging difficulties cause it not to be selected. Selected alternative meets all integrated resource objectives.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The east and west boundaries follow the buffered Class 2 streams. On the north, the unit boundary follows the major timber type. The original boundary was changed to eliminate major slope areas >75%.

Soil, Water, and Wildlife Conservation:

BMP 13.3, 13.2, 13.9: Uphill yarding will minimize potential for erosion. Yarding will be well-away from the Class 3 streams (reclassed from Class 2). Partial suspension over V-notches and Class 3 stream will protect drainages.
BMP 18.1: Scattered reserve trees maintain vertical structure and snag recruitment.

F. Forest Productivity Activities:

Soil mixing and warming from logging disturbance and projected blowdown of reserve trees will result in increased soil biological activity and decomposition rate, potentially increasing productivity. Natural regeneration of Sitka spruce by retention of seed trees on unit edges[and relatively windfirm locations within unit.

MONITORING PLAN

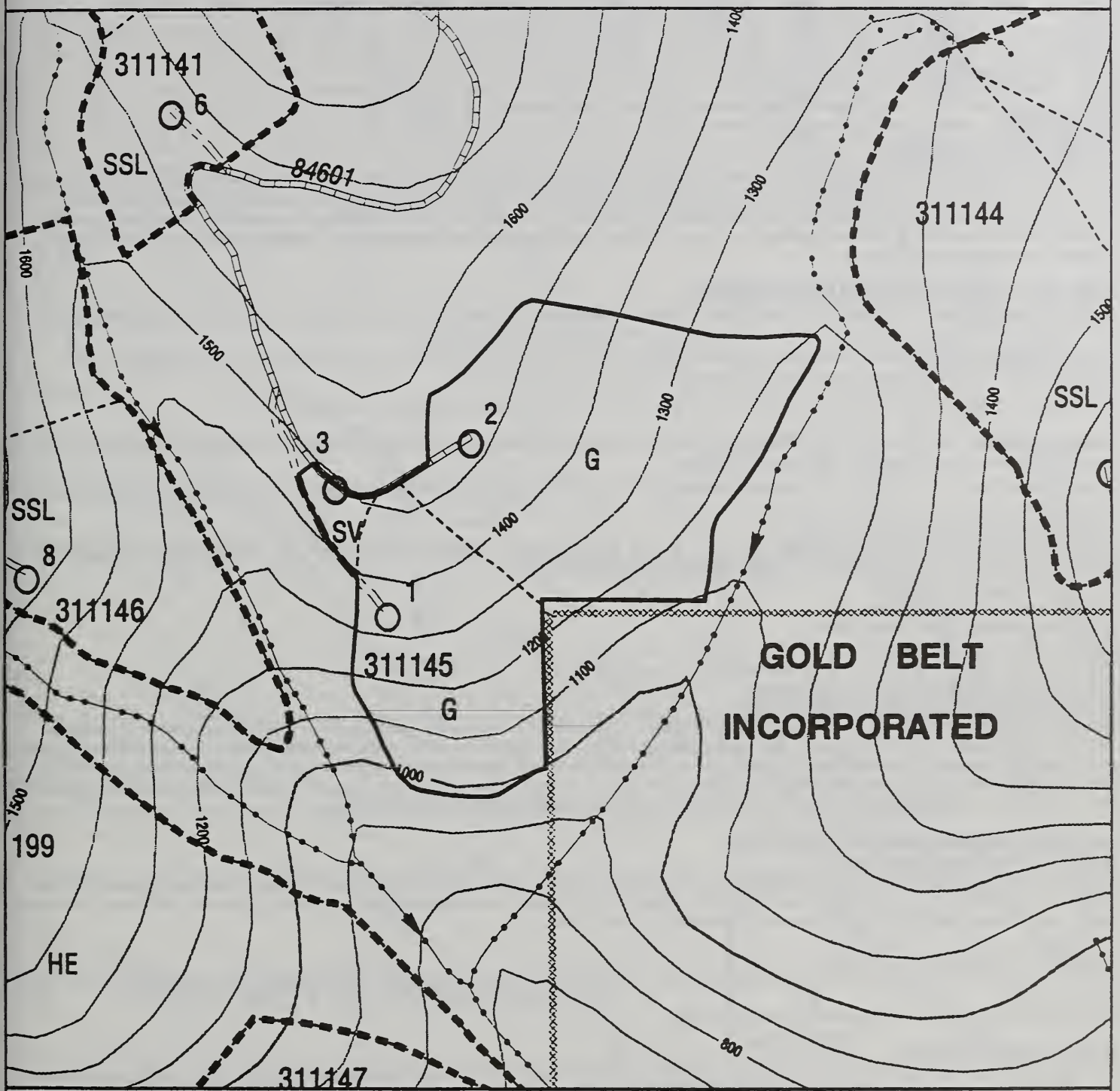
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 311145 ALTERNATIVE(S): C D

ACRES: 56.35 TOTAL NET MBF: 642.1 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 784 PRINT NO.: 43



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.19:38:09.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 81 | UNIT #: 311146 | MAP# 8 | ACRES: 98

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 49 | PHOTO #'S: 784-114 | ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	65	66%	MH-S	510-390	50	H	M	-	M	M
VC-5	25.8	30	31%	MH-S	510-390	55	H	M	-	M	M
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	2	2%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		98	100%	-	-	50	H	M	-	M	M

STAND CHARACTERISTICS

This unit is located on SW-facing slope, just off a high-elevation ridgetop. Slopes range from gentle to moderately steep. An unbuffered Class 3 stream with a deep V-notch borders part of the unit and passes through it on the southeast. A buffered Class 3 stream borders the east edge of the unit. Mountain hemlock forest series; mountain hemlock/blueberry plant association most common. Multi-aged overmature (300+) mountain hemlock and scattered Sitka spruce. Low site productivity, predominantly Vol. Class 4. Highly defective stand, esp. mountain hemlock. Little current windthrow, but high potential due to southerly aspect. Scattered conifer advance growth, variable condition. Shrub cover moderate to dense.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Heavy partial cut is feasible. One-end suspension needed where crossing major V-notches, notably in setting 3. Split yarding can be used to avoid logging across V-notches in most cases. Simple spur road required. Snag retention creates safety hazard.

Visual Resource Management: VQO is Modification, as seen from midground. Area is topographically screened from view as seen from the water. No special visual concerns. Need to consider visual effects when combined with heavy cutting on adjacent ownership's.

Soils / Geology: Moderate to high risk for mass movement. Unit appears to be stable now that boundaries have been adjusted.

Fisheries / Watershed: Protection of the Class 2 and Class 3 streams within and adjacent to the unit is needed to mitigate impacts on downstream fisheries and watershed. Where concerns were identified, setting boundaries were placed.

Wildlife: Reserve trees and snags are needed to maintain habitat and structural diversity. Unit is near potentially suitable mountain goat habitat. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: None noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.
(6) Yarding across major V-notches should be one-end suspension.
(7) Some V-notches will be avoided through split-yarding.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves will best meet the integrated resource objectives: (1) It converts the unit to a more vigorous young stand. (2) A substantial part of net volume available will be harvested. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by protecting streams and V-notches. (5) Site quality will be maintained or improved, due to increased soil functioning. Reserve trees and enclaves of various densities will provide large defective hemlock and spruce for vertical diversity and cavity nesting habitat, as well as seed sources for higher value timber species. 6) Logging systems feasibility is good for a heavy partial cut. Reserves will be located in most windfirm sites to ensure that some trees will be left standing for structural diversity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Original boundaries were modified to reduce visual impacts. The original eastern boundary has been modified to a more natural shape by extending to the southeast. This also provides a more logical harvest setting. The major NE boundary follows the Class 3 stream. Remaining boundaries were located to conform to timber types, major breaks in topography, and logical harvest settings. All boundaries avoid unstable slopes in V-notches.

D. Soil, Water, and Wildlife Conservation:

BMP 13.2, 13.3, 13.16: Uphill yarding will minimize potential for erosion. Yarding will be well-away from the streams. Partial suspension over V-notches and split yarding will protect drainages.
BMP 18.1: Snag and green tree retention preserves structural diversity.

F. Forest Productivity Activities:

Soil mixing and warming from logging disturbance and projected blowdown of reserve trees will result in increased soil biological activity and decomposition rate, potentially increasing productivity. Natural regeneration of Sitka spruce by retention of seed trees on unit edges[and relatively windfirm locations within unit.

MONITORING PLAN

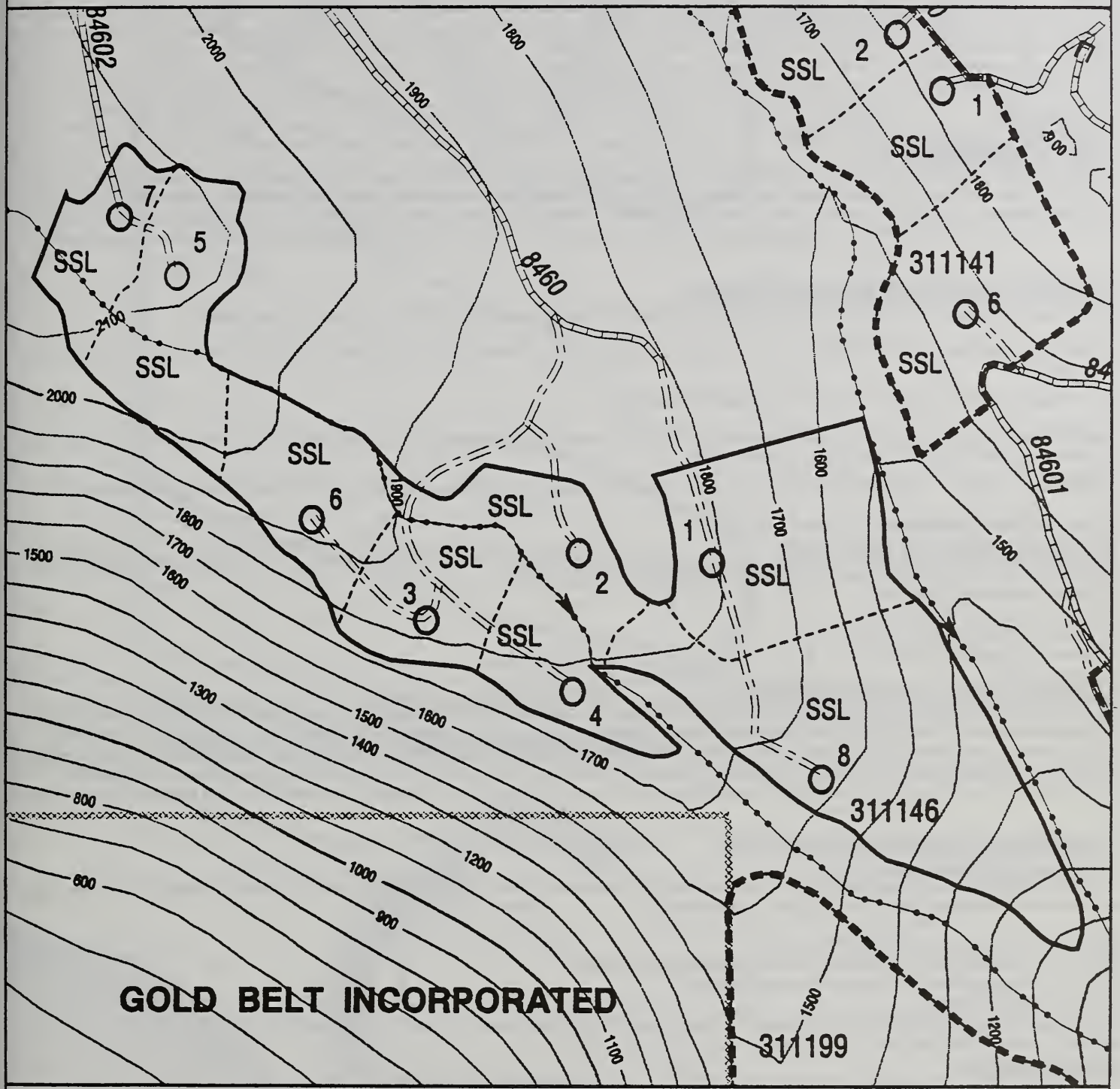
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 311146 ALTERNATIVE(S): C D

ACRES: 97.44 TOTAL NET MBF: 1395.9 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 784 PRINT NO.: 43



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 81 | UNIT #: 311147 | MAP# 17 | ACRES: 23

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 50 | PHOTO #'S: 784-42 | ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc.(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	23	100%	MH-WH	510-130	40	H	MP	M	M	M
VC-5	25.8	-	-	-	-	-	-	-	-	-	-
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		23	100%	-	-	40	H	MP	animal	M	M

STAND CHARACTERISTICS

This low-elevation unit is located on SE-facing slope, adjacent to heavily-logged native corporation lands. Slopes range from moderate to steep. A buffered Class 3 stream borders the unit on the NE and E. Mountain hemlock forest series; mountain hemlock/blueberry plant association most common. Multi-aged overmature (250-350) mountain and western hemlock, scattered Sitka spruce. Low site productivity, Vol. Class 4. Moderately defective . Little current windthrow, but high potential due to S-E aspects and nearness to saltwater. Scattered conifer advance growth, variable condition. Shrub cover moderate over most of unit, but more dense in east portions at lower elevation.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Not suitable for partial cutting; cable logging feasible. Tail trees are required. Concern for safety with snag retention.

Visual Resource Management: VQO is Modification, with VAC of Intermediate. Concern for cumulative visual effect when combined with heavy harvest on adjacent Native Corporation lands.

Soils / Geology: Moderate risk for mass movement. Unit appears to be stable.

Fisheries / Watershed: Protection of the Class 3 stream adjacent to the unit is needed to mitigate impacts on downstream fisheries and watershed. This was done. Stream reclassified from Class 2 to Class 3 due to barriers, absence of fish.

Wildlife: Need for retention of snags and reserve trees to provide for habitat structural diversity. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: None noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

The selected alternative is clearcutting, best suited to this unit for these reasons: (1) Converts the area to more vigorous young stand. (2) Virtually all of the net available volume will be harvested. (3) Unit location, shape, and proximity to other treatments will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by protecting streams and V-notches. (5) Site quality will be maintained. Soil warming will increase decomposition rate and may maintain or increase productivity of the new stand. Note that, although the prescription is clearcutting, there are some opportunities for feathering unit edges and leaving occasional patches to mitigate wildlife and visual concerns, as well as providing sources of windthrow for ecological functioning. These will be addressed on a site-specific basis during layout and administration of the harvest.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

This unit is a portion of a considerably larger area that was split to accommodate different harvest systems. It includes those areas suitable for cable logging, where visual concerns are not as dominant. (See Rx for Unit 311199 - helicopter unit.)

Soil, Water, and Wildlife Conservation:

These soils are relatively stable. No problems anticipated from harvest operations.
BMP 13.3: Class 3 stream buffered to protect downstream reaches.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production.

MONITORING PLAN

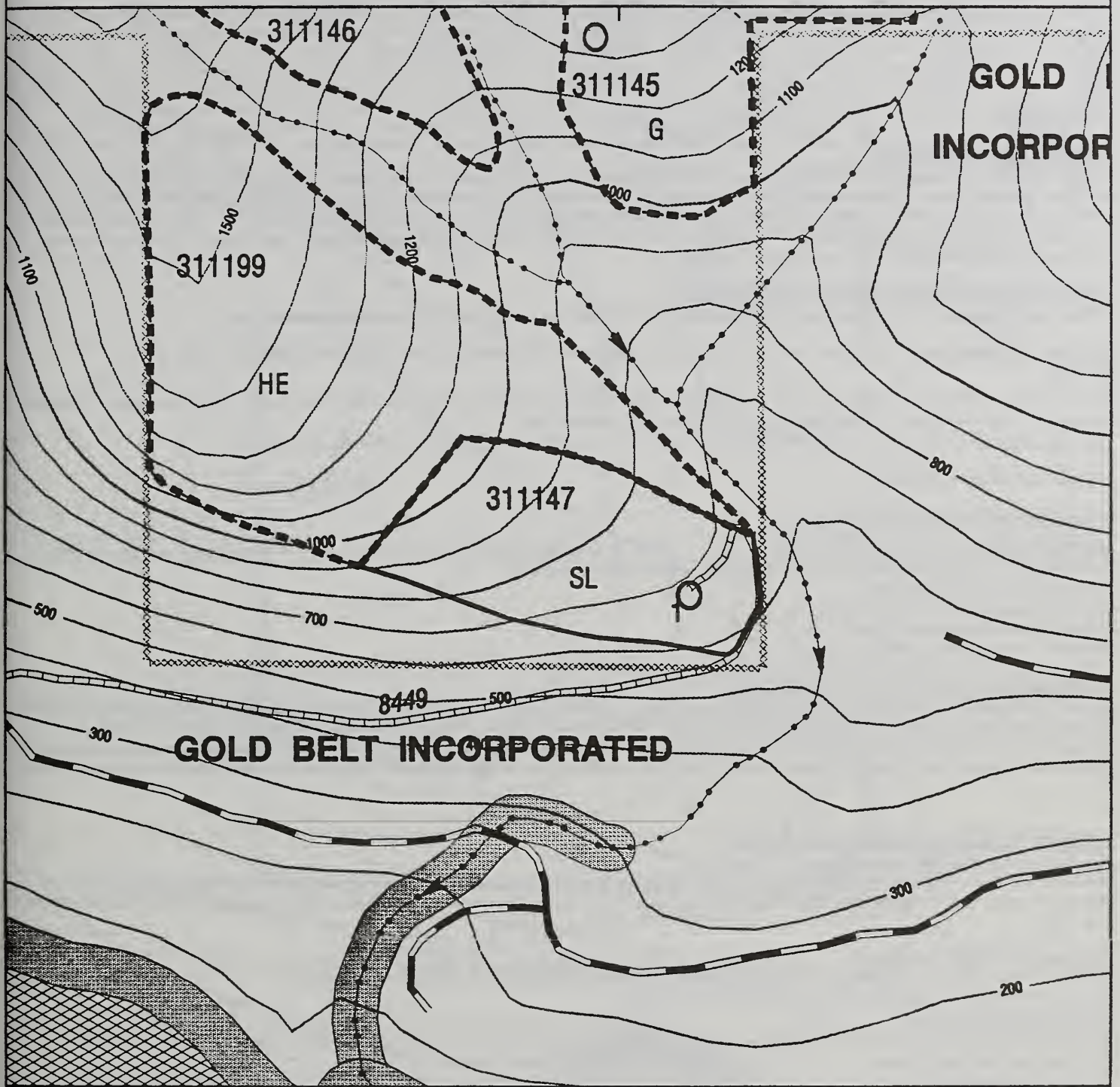
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 311147 ALTERNATIVE(S): C

ACRES: 23.14 TOTAL NET MBF: 264.4 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 784 PRINT NO.: 42



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 81 UNIT #: 311199 MAP# 15 ACRES: 54

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 50 PHOTO #'S: 784-42

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	46	85%	MH-WH	510-130	40	H	MP	M	M	M
VC-5	25.8	8	15%	MH-WH	510-130	45	H	MP	M	M	M
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		54	100%	-	-	41	H	MP	animal	M	M

STAND CHARACTERISTICS

This low-elevation unit is located on SE-facing slope, adjacent to heavily-logged native corporation lands. The unit directly borders Unit 311147, a prescribed clearcut. Slopes range from moderate to steep. A buffered Class 3 stream borders the unit on the NE and E. Mountain hemlock forest series; mountain hemlock/blueberry plant association most common. Multi-aged overmature (250-350 year old) mountain and western hemlock, scattered Sitka spruce. Low site productivity, Vol. Class 4. Moderately defective . Little current windthrow, but high potential due to S-E aspects and nearness to saltwater. Scattered conifer advance growth, variable condition. Shrub cover moderate over most of unit, but more dense in east portions at lower elevation.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit is designated for helicopter logging. No roads, no landings in unit. Pulp logs would be uneconomical to log.

Visual Resource Management: VQO is Modification, but concerns for cumulative effects of added harvest when considering adjacent Native Corp. lands.

Soils / Geology: Originally Class 4 soils - high hazard. Reclassified to Class 3 after field review. Deep V-notches. Opportunities to retain trees on site to mitigate potential soil problems. Opportunity to use helicopter logging to avoid road building in sensitive areas.

Fisheries / Watershed: Protection of the Class 3 stream adjacent to the unit will mitigate impacts on downstream fisheries and watershed.

Wildlife: Potential mountain goat habitat.

Cultural / Recreation / Subsistence: None noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

The selected alternative is **shelterwood with reserves,** best suited to this unit for these reasons: (1) Converts the area to more vigorous young stand. (2) Most of the net available volume will be harvested, since a large portion of the reserves will be cull trees. (3) Retention of various amounts of reserve trees and islands, combined with feathered edges will allow VQO to be met. The treatment will mitigate effects of previous harvest on nearby lands. (4) Fish habitats will be maintained by protecting streams and V-notches. (5) Site quality is likely to be maintained, but probably not improved. Minimal soil disturbance will do little to bring mineral soil into the biologically active layer.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

This unit is a portion of a considerably larger area that was split to accommodate different harvest systems. It includes those areas suitable for cable logging, where the effects of harvest on adjacent Goldbelt, Inc. lands have added to cumulative visual impacts. The area as delineated follows logical timber types and avoids areas with high hazard soils.

Soil, Water, and Wildlife Conservation:

BMP 13.5, 13.9: These soils are relatively stable. Helicopter logging will minimize soil disturbance. No roads will be built in unit.
BMP 13.16: Protect Class 3 stream to reduce impacts to downstream reaches.

Forest Productivity Activities:

Soil mixing from windthrow of reserve trees is expected to reduce podzol development on limited areas. Exposure of mineral soil on windthrow mounds is expected to provide favorable seedbed for spruce.

MONITORING PLAN

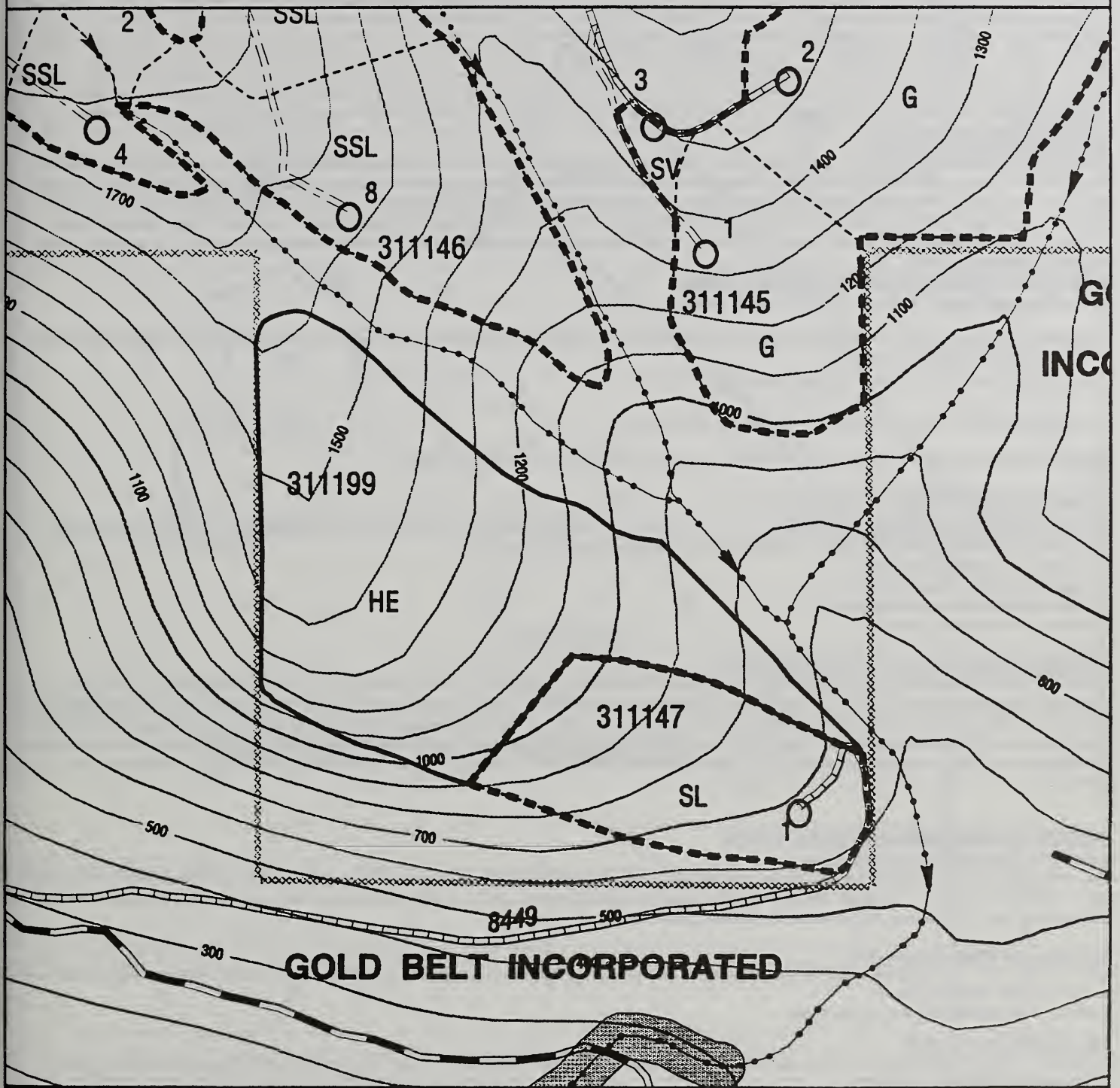
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 311199 ALTERNATIVE(S): D

ACRES: 54.39 TOTAL NET MBF: 702.7 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 784 PRINT NO.: 42



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.19:41:01.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 81 | UNIT #: 312143E | MAP#: 11 | ACRES: 21

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 51 | PHOTO #'S: 784-35 | ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc.(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	5	25%	WH	140-110	45	M	MP	L	M	M
VC-5	25.8	-	-	-	-	-	-	-	-	-	-
VC-6	32.8	15	75%	S-WH	390-140	55	M	G	L	H	M
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		21	100%	-	-	52	M	M	mistletoe	H	M

STAND CHARACTERISTICS

High-elevation stand, just below ridgetop, moderately steep, on SE to S aspects. A Class 3 stream in a V-notch borders the west unit boundary. Muskeg borders the top of the unit. Ground is broken, with rocky outcrops, benches, and steep pitches. Risk of mass movement is generally moderate. Sitka spruce - western hemlock forest series; predominant plant assoc. Sitka spruce-western hemlock/Vaccinium-devils club. Functionally even-aged overmature Sitka spruce and western hemlock. Productive site, mostly Vol. Class 6, with inclusion of Vol.Class 4. Average defect. Little evidence of recent windthrow; moderate risk of windthrow following harvest. Overstory age is generally 350 years and older. Understory vegetation generally open, with low Vaccinium, with patches of devils club, skunk cabbage, and shield fern. Scattered conifer advance growth in poor condition.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area best suited for helicopter logging.

Visual Resource Management: Lower part of unit: VQO is Partial Retention; VAC is Intermediate. All other areas have a VQO of Modification, and VAC of Intermediate. Reserve trees would mitigate visual impacts.

Soils / Geology: Slide area along east boundary, in Vol.Class 4 area.

Fisheries / Watershed: Class 3 stream adjacent to west boundary of unit.

Wildlife: No special concerns noted. Opportunity for reserving live trees and snags for habitat structural diversity.

Cultural / Recreation / Subsistence: None noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves best meets integrated resource objectives. Rationale: (1) Converts unit to more vigorous young stand. (2) More than 90% of net volume available will be harvested, nearly as much as clearcutting. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by buffering Class 3 stream and protecting vegetation in the buffered V-notch. (5) Site quality will be maintained or improved, due to increased soil functioning. Reserve trees provide large defective hemlock and spruce for vertical diversity, cavity nesting habitat, and seed sources for higher value timber species. Reserve groups will provide structural diversity and ecological functions. (6) Logging systems feasibility is good for a heavy partial cut. Selected alternative meets all integrated resource objectives.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit was originally part of 312143, but was split into east and west units to recognize topographical and operational distinctions. The neck at the top of unit 312143E was deleted due to soils concerns. The eastern boundary follows the edge of a stable slope configuration, avoiding the slide area to the east. The unit is bounded on the south by Gold Belt Corp. lands. On the west, the unit follows the buffered Class 3 stream.

Soil, Water, and Wildlife Conservation:

BMP 13.3,13.5, 13.9, 13.2: Buffer will protect the Class 3 stream on west boundary. Unit has been located to avoid high risk area to the east. Helicopter logging will ensure that soil and water objectives are met.
BMP 18.1: Snag retention for cavity nesting wildlife.

Forest Productivity Activities:

Soil mixing from windthrow of reserve trees is expected to reduce podzol development on limited areas. Exposure of mineral soil on windthrow mounds is expected to provide favorable seedbed for spruce.

MONITORING PLAN

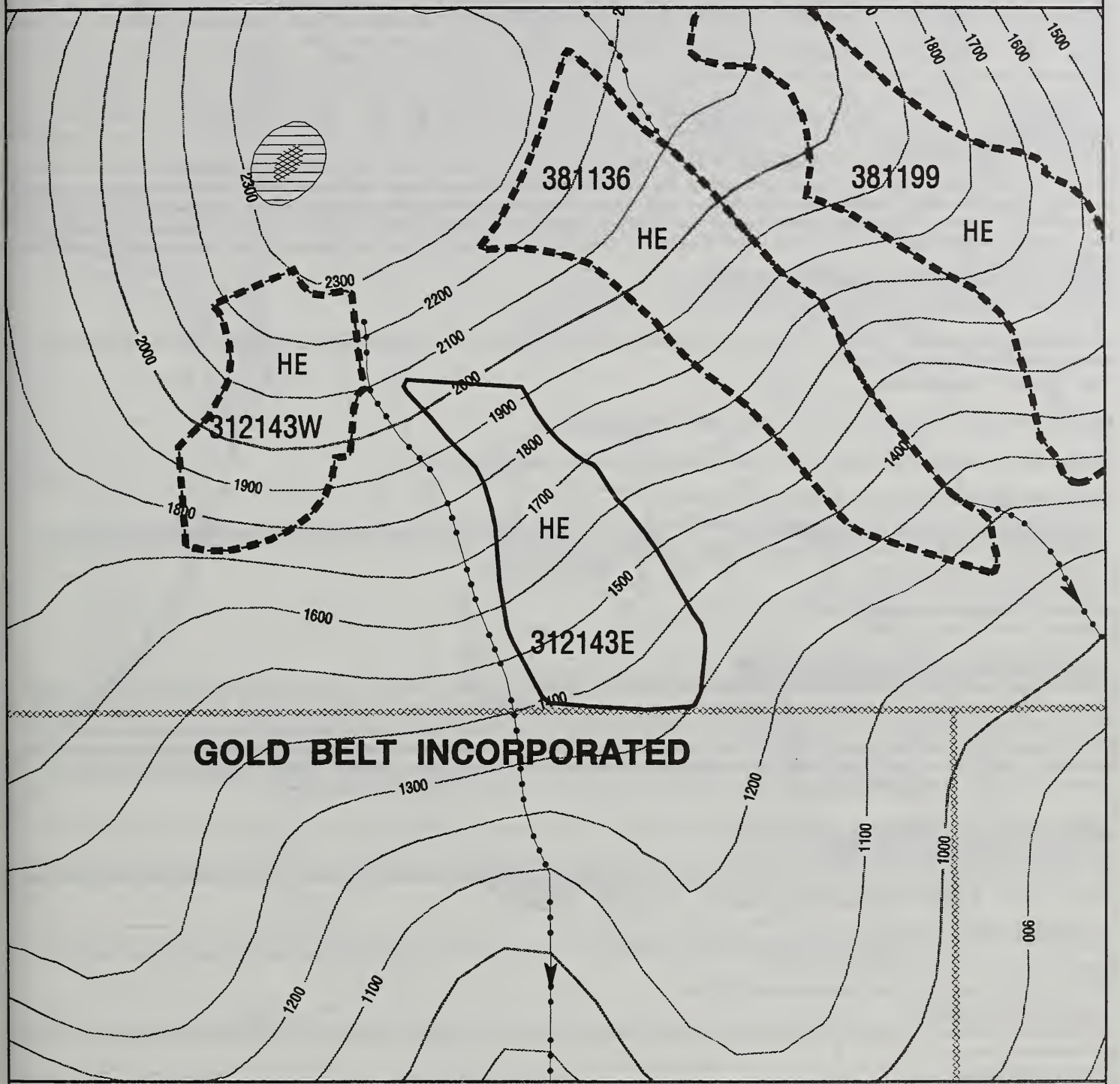
Date	Activity	Standard	Who
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 312143E ALTERNATIVE(S): D

ACRES: 20.62 TOTAL NET MBF: 500.6 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 784 PRINT NO.: 35



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 81 | UNIT #: 312143W | MAP# 10 | ACRES: 15

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 51 | PHOTO #'S: 784-35 | ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc.(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	5	34%	WH	140-110	45	M	MP	L	M	M
VC-5	25.8	-	-	-	-	-	-	-	-	-	-
VC-6	32.8	10	66%	S-WH	390-140	55	M	G	L	H	M
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**15**	**100%**	-	-	**52**	**M**	**M**	mistletoe	**H**	**M**

STAND CHARACTERISTICS

High-elevation stand, just below ridgetop, moderately steep, on S to SW aspects. A short reach of a Class 3 stream in a V-notch borders the northwest corner of the unit. Ground is broken, with rocky outcrops, benches, and steep pitches. Risk of mass movement is generally moderate. Sitka spruce - western hemlock forest series; predominant plant assoc. Sitka spruce-western hemlock/Vaccinium-devils club. Functionally even-aged overmature Sitka spruce and western hemlock. Productive site, mostly Vol. Class 6, with inclusion of Vol.Class 4. Average defect. Little evidence of recent windthrow; moderate risk of windthrow following harvest. Overstory age is generally 350 years and older. Understory vegetation generally open, with low Vaccinium, patches of devils club, skunk cabbage, and shield fern. Scattered conifer advance growth in poor condition. Moderate windthrow risk.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter logging. Snag retention is a safety issue.

Visual Resource Management: Lower part of unit: VQO is Partial Retention; VAC is Intermediate. All other areas have a VQO of Modification, and VAC of Intermediate. Reserve trees would mitigate visual impacts.

Soils / Geology: No special constraints.

Fisheries / Watershed: Buffered Class 3 stream passes through northwest corner of unit.

Wildlife: No special concerns noted. Opportunity for reserving live trees and snags for habitat structural diversity.

Cultural / Recreation / Subsistence: No special concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves best meets integrated resource objectives. Rationale: (1) Converts unit to more vigorous young stand. (2) More than 90% of net volume available will be harvested, nearly as much as clearcutting. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. Increased reserve tree density combined with vegetative screening, at lower portions of unit will meet Partial Retention objective. (4) Fish habitats will be maintained by buffering Class 3 stream and protecting vegetation in the buffered V-notch. (5) Site quality will be maintained or improved, due to increased soil functioning. Reserve trees provide large defective hemlock and spruce for vertical diversity, cavity nesting habitat, and seed sources for higher value timber species. Reserve groups will provide structural diversity and ecological functions. (6) Logging systems feasibility is good for a heavy partial cut. Selected alternative meets all integrated resource objectives.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit was originally part of 312143, but was split into east and west units to recognize topographical and operational distinctions. The boundaries follow the edge of stable slope configurations.

Soil, Water, and Wildlife Conservation:

BMP 13.3, 13.5, 13.9, 13.2: Buffer will protect the Class 3 stream on west boundary. Unit has been located to avoid most of high risk slide area to the east. Helicopter logging will ensure that soil and water objectives are met.
BMP 18.1: Reserve trees for structural diversity and snag recruitment.

Forest Productivity Activities:

Soil mixing from windthrow of reserve trees is expected to reduce podzol development on limited areas. Exposure of mineral soil on windthrow mounds is expected to provide favorable seedbed for spruce.

MONITORING PLAN

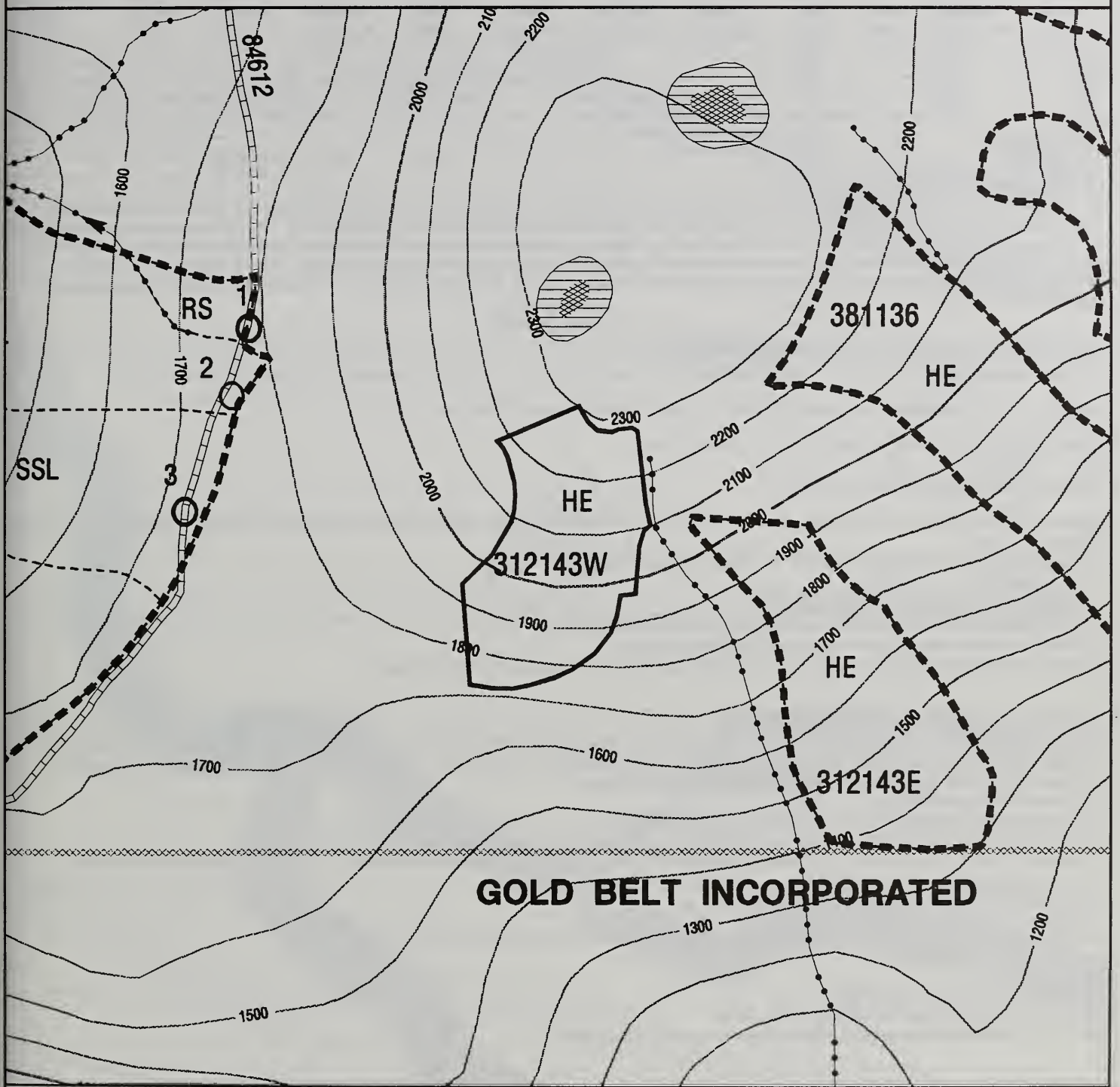
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 81 UNIT: 312143W ALTERNATIVE(S): D

ACRES: 15.16 TOTAL NET MBF: 343.7 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 784 PRINT NO.: 35



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321002 MAP #: 40 ACRES: 5

AERIAL PHOTO YEAR: 1989 FLIGHT LINE: 24 PHOTO #'S: 888-197

ALTERNATIVE(S): D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	5.1	100%	HC	220	50	M	MP	L	M	L
VC-5	27.0	-	0%	-	-	-	-	-	-	-	-
VC-6	39.5	-	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		5.1	100%	-	-	50	M	MP	DECLINE	M	L

STAND CHARACTERISTICS

Two-storied stand in the western hemlock/yellow cedar series. This stand also has trace amounts of Sitka spruce in the overstory. The stand is composed of medium size, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 20% on aspects from NW to N. The unit is bounded by muskeg and low site areas on all sides. Overstory ages are 150 to 300 years with high defect and significant amounts of conk, cedar decline, mechanical/animal damage, and windthrow. The understory is <20% stocked with 20 to 150 year old w. hemlock which occur in groups throughout with generally fair vigor. Ground cover is dense Vaccinium associated with pockets of skunk cabbage. Some new windthrow found throughout the unit. Site quality is fair over the unit as a whole. This unit is best *described* as a small hill in the middle of a muskeg and low site area.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Road 84959 will terminate with a landing in nearby unit 321004. All timber will be yarded via helicopter to this location.

Visual Resource Management: Partial Retention; however flat terrain, unit size and trees will hide unit.

Soils / Geology: No concerns. Moderate to flat area, inherently stable.

Fisheries / Watershed: No concerns- no streams.

Wildlife: Suitable habitat for hairy woodpecker, red breasted sapsucker, black bear, and marten. Recommend leaving green trees and snags. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: Surveyed for cultural resources- none found.

INTEGRATED RESOURCE OBJECTIVES

(1) Regeneration of understocked stand(in volume class 4) for programmed timber yield.
(2) Mitigation for visual impacts by retention of green culls and some snags.
(3) Provide vertical habitat and cavity nesting structure by retaining green culls and snags adjacent to muskeg areas.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting with reserves: The objective of clearcutting with reserves is to retain trees that will provide an ecological function for wildlife and natural windthrow; i.e. , mixing of organic and mineral layers, potentially retaining or increasing site productivity. Trees that are not windthrown will provide long term structural diversity and enhance wildlife habitat. Select reserve trees that best meet the following criteria:
1) Apparent cull or high defect tree.
2) Select windthrow susceptible trees for mixing of organic and mineral layer.
3)Also select windfirm tree such as large cull yellow cedar and yellow cedar snags for long term stand structure and wildlife habitat
Clearcutting with reserves is considered in the design of the overall unit. Helicopter yarding will allow the retention of 6 to 10 high defect trees per acre plus snags.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

This unit contains all the volume class 4 area on a timber type island that is surrounded by muskeg and low site lands.

Soil, Water, and Wildlife Conservation:

BMP 13.15: No ground disturbance outside of timber falling.
BMP 18.1: Wildlife habitat improvement planning–Reserve trees to maintain structure.

Forest Productivity Activities:

Favor yellow cedar and Sitka spruce when found during pre commercial thinning. As prescribed, leaving scattered trees to blow down will create a pit and mound microtopography which will benefit this site by mixing organic and mineral layers.

MONITORING PLAN

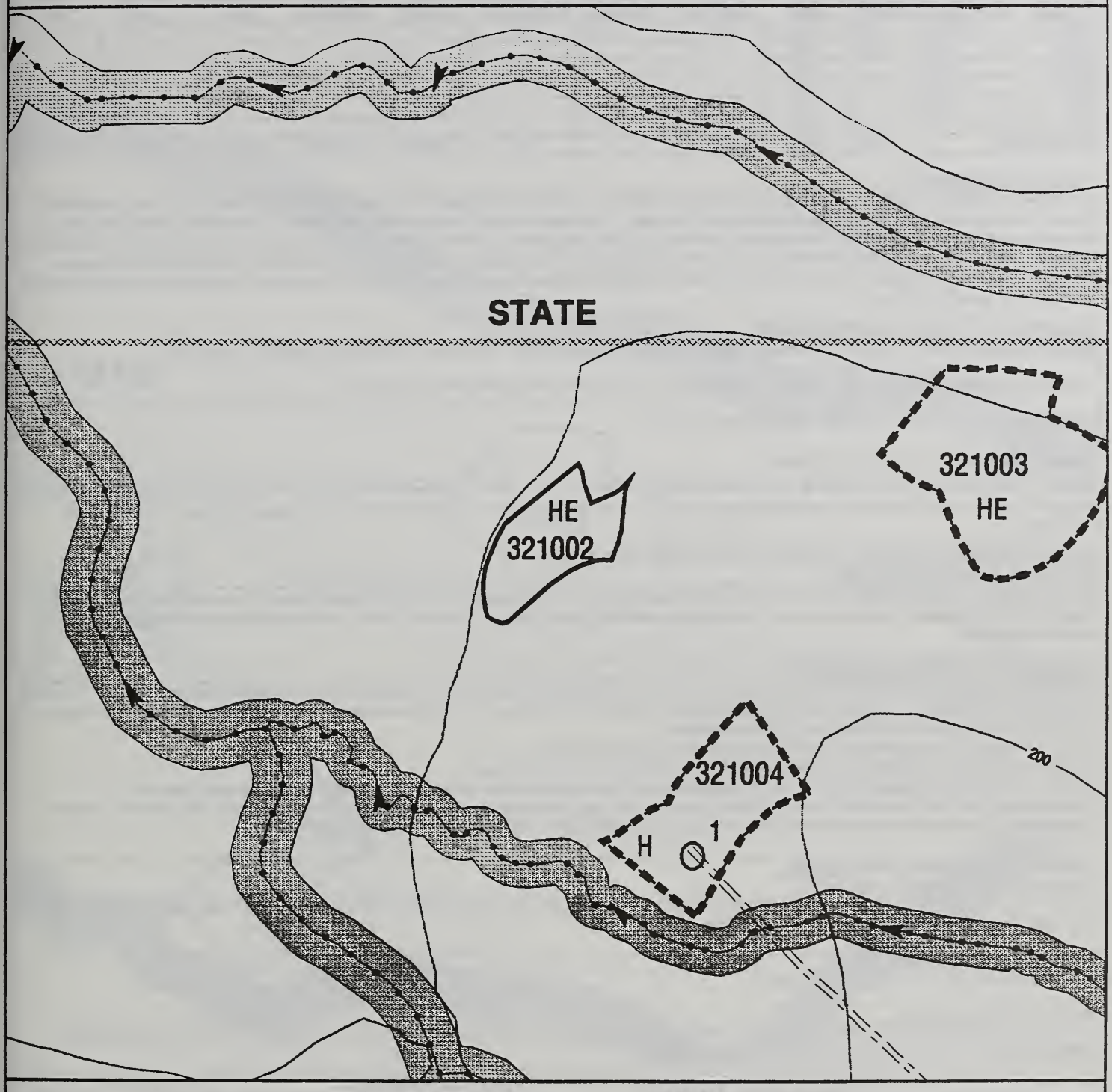
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321002 ALTERNATIVE(S): D

ACRES: 5.09 TOTAL NET MBF: 59.3 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 24 ROLL NO.: 888 PRINT NO.: 197



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321003 MAP #: 39 ACRES: 13

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 48 PHOTO #'S: 684-114

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	10.8	84%	MH	420	60	L	M	L	M	L
VC-5	27.0	2.1	16%	-	-	-	-	-	-	-	-
VC-6	39.5	-	0%	-	-	-	-	-	-	-	-
VC-7	56.6	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		12.9	100%	-	-	50	CHECK	CHECK	Mistletoe	CHECK	CHECK

STAND CHARACTERISTICS

Two-storied/ unevenaged stand in the mt. hemlock series. This stand also has western hemlock, Sitka spruce, yellow cedar in the overstory. The stand is composed of medium size, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 20% on aspects from NE to N. The southern portion of the unit is bounded by muskeg and low site while the northern area is bounded by Alaska State Lands. Overstory ages are 300 to 400 years old with moderate defect and significant amounts of conk, mistletoe ,and mechanical/animal damage. The understory is <20% stocked with 20 to 150 year end w. hemlock m. hemlock which occur in groups throughout, Understory vigor is fair to poor. Ground cover is sparse to moderately dense *Vaccinium* associated with rusty menziesia. No significant new windthrow noted. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Road 84959 will terminate with a landing in nearby unit 321004. All timber will be yarded via helicopter to this location.

Visual Resource Management: Partial retention; however, flat terrain, unit size and trees will hide the unit from view.

Soils / Geology: No concerns. Moderate to flat area inherently stable.

Fisheries / Watershed: No Concerns. No streams.

Wildlife: Suitable habitat for hairy woodpecker, red-breasted sapsucker, black bear, and marten. Recommend leaving green trees and snags. Clearcut with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be in vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: Surveyed for cultural resources- None found.

INTEGRATED RESOURCE OBJECTIVES

The most obvious resource objective is to maintain some stand structure for habitat for the species mentioned in the wildlife section. This retention will also mitigate any further visual concerns however slight they may be. Dwarf mistletoe was found in both mountain and western hemlock, which will preclude the retention of most of the trees of these species.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting with reserves: The objective of clearcutting with reserves is to retain trees that will provide an ecological function for wildlife and natural windthrow ; i.e., mixing of organic and mineral layers, potentially retaining or increasing site productivity. Trees that are not windthrown will provide long term structural diversity and enhance wildlife habitat. Select reserves that best meet the following criteria:

1) Apparent cull or high defect yellow cedar or Sitka spruce-avoid hemlock with mistletoe.
2) Select both windfirm, for wildlife and non-windfirm trees for mixing the organic and mineral layer.
3) Feather edges along muskeg low site areas, leaving intermediate trees some snags and green culls- avoid leaving trees infected with dwarf mistletoe.

Clearcutting with reserves is considered in the overall design of the unit. Helicopter yarding will allow the retention of 4 to 6 high defect trees per acre plus some snags. Shelterwood with reserves would be feasible except that the level of reserve trees would not allow for sanitizing mistletoe in hemlock.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The area along the southern boundary of the unit is low site or muskeg. The area to the north of the unit is State of Alaska lands. To the east and west, the unit is bounded by low site and muskeg as well as volume class 4 and 5 lands.

Soil, Water, and Wildlife Conservation:

13.15: Wetland protection during harvest operations.

Forest Productivity Activities:

Favor yellow cedar and Sitka spruce during precommercial thinning. As prescribed, leaving scattered trees to blow down will create a pit and mound microtopography which will benefit this site by mixing organic and mineral layers in the soils.

MONITORING PLAN

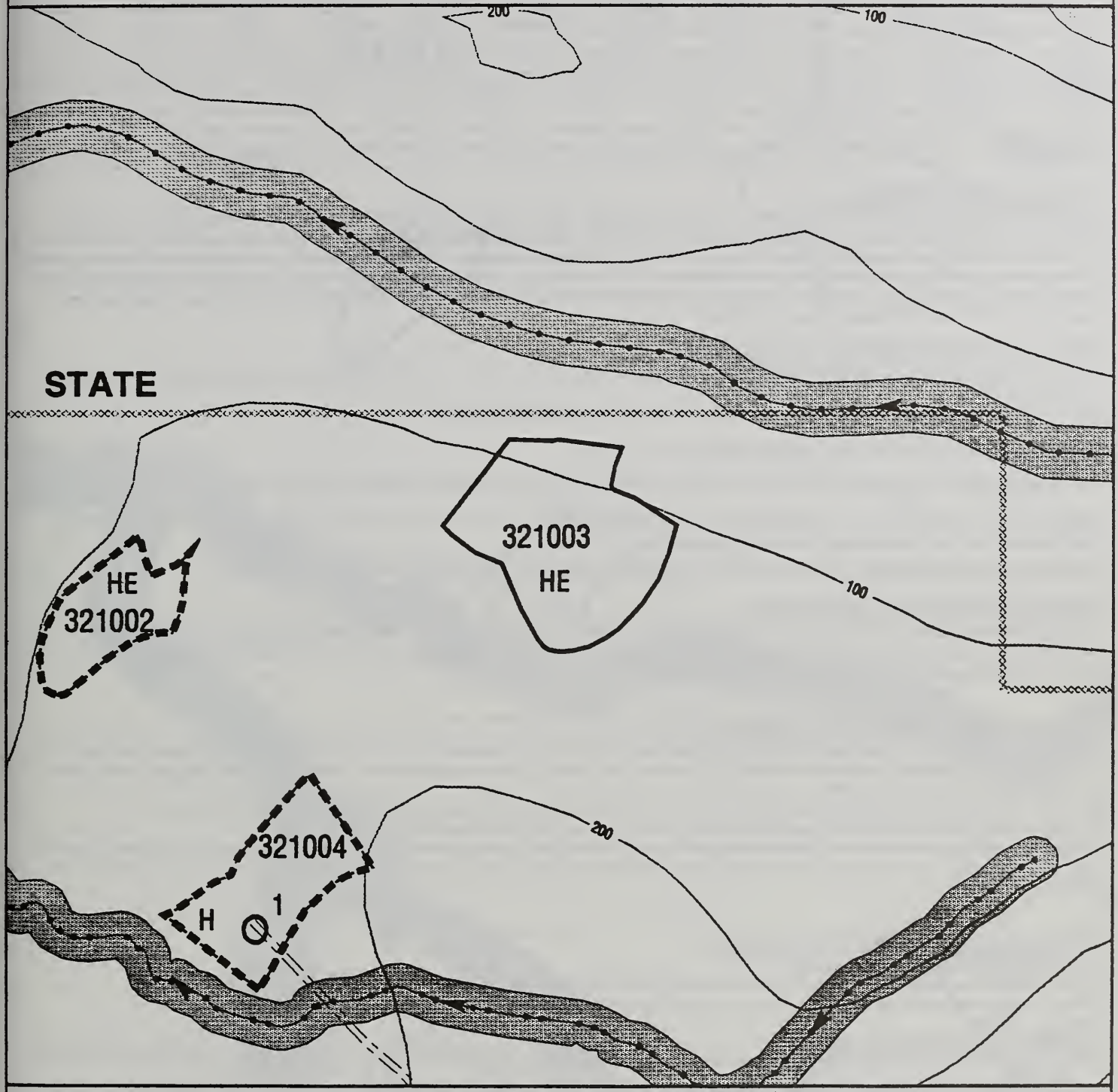
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321003 ALTERNATIVE(S): D

ACRES: 12.95 TOTAL NET MBF: 177.5 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 118



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321004 MAP #: 45 ACRES: 8

AERIAL PHOTO YEAR: 1989 FLIGHT LINE: 24 PHOTO #'S: 684-117

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume et + Utilit	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	7.5	100%	MH HC	420 220	60	L	P	M	L	L
VC-5	27.0	-	0%	-	-	-	-	-	-	-	-
VC-6	39.5	-	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		7.5	100%	MH HC	420 220	60	L	P	Mistletoe	L	L

STAND CHARACTERISTICS

Multiple storied/uneven stand in the mt. hemlock and w. hemlock/y. cedar series. This stand also has minor amounts of Sitka spruce in the overstory. The stand is composed of small to medium size, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 30% on aspects from W to NW. The unit is bounded by muskeg, low site areas and a stream protection buffer to the SW. Overstory ages are 150 to 300 years old with moderate defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage and defoliators. The understory is 41-60% stocked with 20 to 80 year old W. hemlock and Sitka spruce which occur groups throughout with fair to good vigor. Ground cover is moderately dense *vaccinium* associated with rusty menziesia skunk cabbage. No significant new windthrow found. Site is poor to fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Highlead yarder. Landing will be used as main Helicopter landing for units 321002, 321003 and 321 group selection harvests. Unit not suitable for partial cut.

Visual Resource Management: Partial retention, however flat terrain and foreground trees will hide unit.

Soils / Geology: No concerns, moderate terrain is inherently stable.

Fisheries / Watershed: Class I stream was identified within original unit boundaries. Unit was drastically modified to its current configuration to avoid fisheries conflicts.

Wildlife: Suitable habitat for red breasted sapsucker and black bear. Retain green trees and snags to maintain habitat structure. Bald eagle and otter habitat have been preserved due to unit reconfiguration. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: Cultural- area above 100 foot elevation, outside of high potential area. Recreation- no concerns.

INTEGRATED RESOURCE OBJECTIVES

The major resource objective noted is to maintain some stand structure for habitat for the species mentioned in the wildlife section. However retention in large part will be difficult due to the logging the systems proposed for this unit and the fact that a larger than normal helicopter landing will be located in the center of the unit. Therefore reserve trees and snags will be limited to the edges of the unit.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting with reserves (northeast portion of the unit): The objectives of clearcutting with reserves, in this unit, is to provide habitat for the species mentioned in the wildlife section. Trees that are not windthrown will provide long term structural diversity and enhance wildlife habitat. Select trees that best meet the following criteria:
1) Apparent cull or high defect yellow cedar.
2) Windfirm trees that will contribute to long term stand structure and some y. cedar snags or firm broken off hemlock snags at the edge of the unit.
Clearcutting with reserves is considered the best design for the outer portions of the unit especially the northern and eastern portions.
Clearcutting (southeast portion of the unit): Since the landing at the end of road 84959 will be enlarged for helicopter use the adjacent areas (about 200 foot radius at the landing) should be free of all material that can interfere with helicopter yarding i.e. tall trees and snags. Retain pockets thrifty reproduction, as much as possible, when found.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded by lowsite and muskeg lands to the north, south and east and a stream buffer to the SW.
Clear-cut with reserves in the north east portion of the unit, about 1/2 the area and clearcutting in the southwest 1/2 of the unit.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Unit was greatly reconfigured and reduced in size to avoid conflicts with class II streams identified within the paper plan unit. Rip landing used for helicopter for seed bed.
BMP 18.1: Wildlife habitat; maintain stand structure for wildlife species.

Forest Productivity Activities:

Expose mineral soil during yarding activities, this is designed to reduce the formation of podzol soils. Also open southwest area, allowing it to warm, which will increase biological activity. The northeast area will have scattered blowdown which will help the mixing of organic and mineral soils layers, which will create a pit and mound microtopography. Favor yellow cedar and Sitka spruce during precomercial thinning. Also weed out any mistletoe and deformed residual reproduction at that time.

MONITORING PLAN

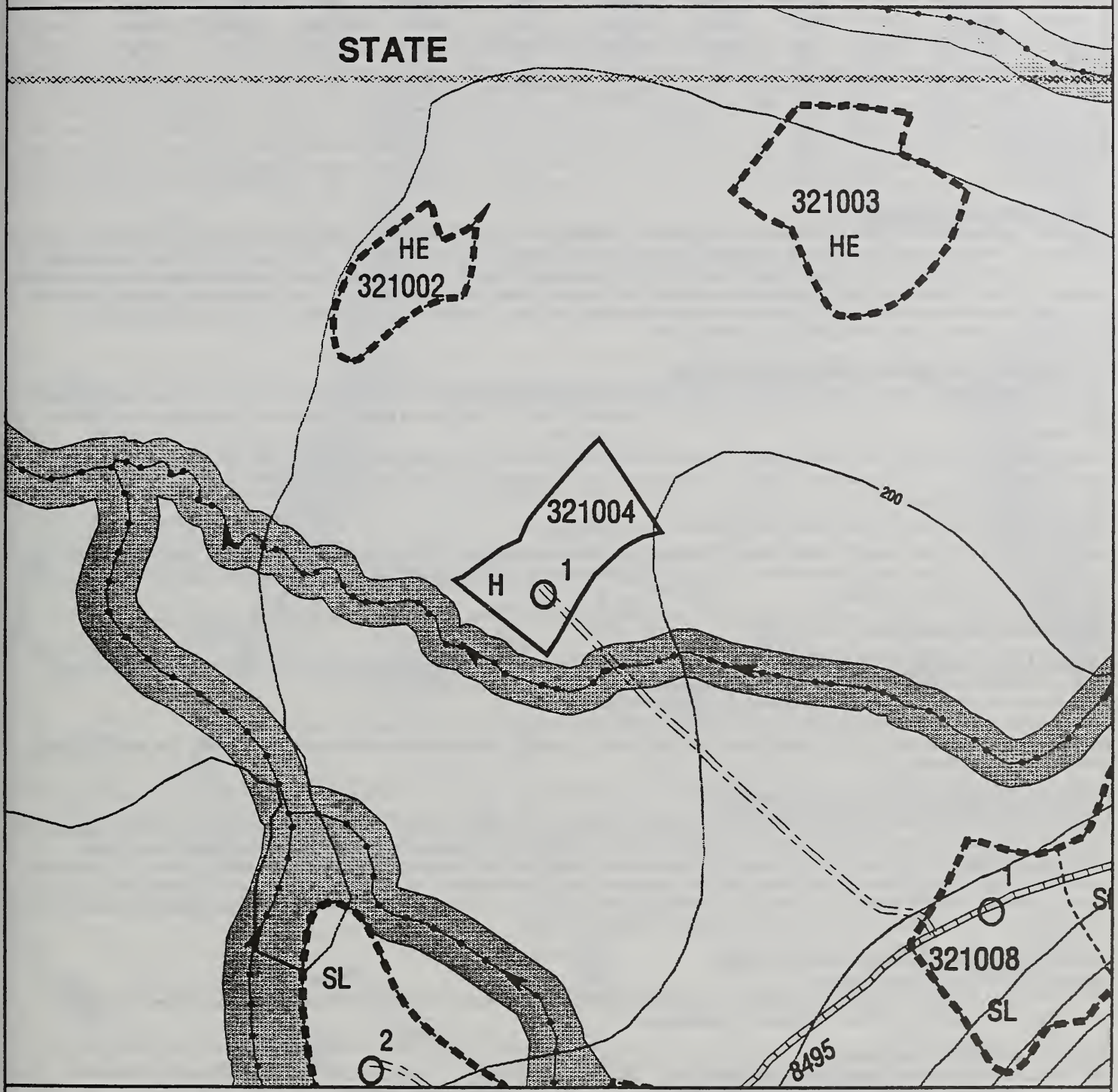
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321004 ALTERNATIVE(S): D

ACRES: 7.54 TOTAL NET MBF: 87.9 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 24 ROLL NO.: 888 PRINT NO.: 197



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321006 MAP #: 54 ACRES: 39

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 26 PHOTO #'S: 684-122

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	8.0	21%	H	110 120	55	L	M	L	M	L
VC-5	27.0	17.1	45%	H	110	60	M	G	L	H	L
VC-6	39.5	13.3	35%	H	120	75	H	E	L	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		38.4	100%	-	-	64	M	G	Mistletoe	H	L

STAND CHARACTERISTICS

Functionally even aged in volume class 4 and 5 and multiple storied in volume class 6 stand in the w. hemlock series. This stand also has trace amounts Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 60% on aspects from NE to N. The Overstory ages are 200 to 300 years old with moderate defect and significant amounts of mistletoe on lower slopes, mechanical/animal damage, old defoliator damage in tree tops. The understory is <20% stocked on lower slope, 20-40% stocked on upper slope stocked with 20 to 40 year old W. hemlock and Sitka spruce which occur in groups on lower slopes and evenly on upper slopes throughout with fair to good vigor. Ground cover is sparse to dense vaccinium associated with (rusty menziesia and shield fern. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Northern setting is slackline with 90 foot tower. Southern settings at switchbacks are running skyline. Overstory removal possible between and adjacent to switchbacks to meet visual objectives. Unit is otherwise unsuitable for partial cut. Retention of snags is a safety issue. Skyline extensions outside unit. 2 Sta. temporary road.

Visual Resource Management: VQO- Partial Retention. Viewed in middle ground. Cumulative impacts with adjacent units, results in modification, exceeding VQO Reduce impacts by 1/3 to 1/2 by 1) reduce size, 2) Partial cut, 3)leave green culls, 4)Shape unit with round tops and no straight lines.

Soils / Geology: No Concerns.

Fisheries / Watershed: Buffer on Class II stream along west side of unit to protect habitat.

Wildlife: Goshawk survey- no evidence. Suitable habitat for red breasted sap sucker and black bear. Recommend leave trees and snags for habitat structure. and snag density. Shelterwood with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be invicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of understocked stand,(in VCs 4 & 5) with diseased, mature overstory for programmed timber yield.
(2) Release and sanitation of understory(in volume class 6) for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention on southern portion of unit, in volume class 6, around the switchback road.
(4) Retain minor amounts of green cull or high defect trees in the volume class 4 & 5 areas for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative for several reasons: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve trees where they are feasible with logging systems provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of harvest impacts. Reserves should be green culls or less common species such as Sitka spruce or yellow cedar where available. (3) Spacing of reserve allows for release of a thrifty existing understory and intermediate portion of the stand where applicable. (4) Reserve trees and reproduction will provide continued stand structure for habitat and will serve to mask the switchback roads in this portion of the unit for visual objectives. Clearcut and clearcut with reserves would not mitigate visual impacts or provide as many snags and green trees for wildlife habitat. Defer would not provide a timber yield during this harvest.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The north boundary is between the 300 to 400 foot elevation level at logical yarding limits. The west is bounded by a class II creek. The east is bounded by a class III creek. The north is bounded by a multiple switchback in the road system.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Yarding with one end suspension along road switchbacks.
BMP 13.3: Water Quality Protection Needs--TTRA Stream Buffers.
BMP 18.1: Wildlife improvement--retain cavity nesting structures.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Retain patches of advanced reproduction.
(3) Schedule precomercial thinning. Favor S. spruce and Y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321006 ALTERNATIVE(S): C

ACRES: 38.47 TOTAL NET MBF: 958.8 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 125



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:34:42.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321007 MAP # 59 ACRES: 47

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 48 PHOTO #'S: 684-117

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	18.3	39%	H XC	130 420	55	L	P	-	L	L
VC-5	27.0	28.6	61%	H HC	130 420	60	M	MP	M	M	M
VC-6	39.5	-	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		46.9	100%	-	-	58	M	MP	Mistletoe	M	M

STAND CHARACTERISTICS

Multiple storied/ unevenage stand in the mixed conifer/ w. hemlock/y. cedar series. The stand is composed of small to large, moderate to high quality sawtimber with minor amounts of utility pulp. Slopes range from 10 to 90% on NE aspect. The eastern portion of the unit is bounded by a class II V- notch creek. Overstory ages are 200 to 300+ years old with moderate defect and minor amounts of conk mistletoe and windthrow. The understory is 40-60% 60% stocked with 20 to 50 year old w. hemlock which occurs both in groups and in small evenaged patches throughout, with fair to good vigor. Ground cover is sparse to moderately-dense *vaccinium* associated with devils club and skunk cabbage. Scattered new windthrow found on upper slopes. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline. Suitable for heavy partial cut. Retention of snags a safety hazard. Tailholds outside unit, multiple stump anchors req'd.

Visual Resource Management: Partial retention VQO - visible from middleground. mitigate by 1) dropping unit. 2) reconfiguring. 3) partial harvesting. 4) retention of green cull and snag. mitigation's in conjunction with other similarly viewed units in the area.

Soils / Geology: Class III soils.

Fisheries / Watershed: Class II buffer below unit.

Wildlife: Reserve green trees and snags to maintain habitat for red breasted sapsucker, marten and black bear. Shelterwood with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be in vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: no issues.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

The overriding resource direction points to the retention of green timber for visual and wildlife objectives.
Retention will be possible to some degree using the proposed skyline logging system.
There is a significant amount advanced regeneration that can be retained with an overstory removal.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative for several reasons: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve trees where they are feasible with logging systems provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of harvest impacts. Reserves should be green culls or less common species such as Sitka spruce or yellow cedar where available. (3) Spacing of reserve allows for release of a thrifty existing understory and intermediate portion of the stand where applicable. (4) Reserve trees and reproduction will provide continued stand structure for habitat and will serve to mask the switchback roads in this portion of the unit for visual objectives. Clearcut and clearcut with reserves would not mitigate visual impacts or provide as many snags and green trees for wildlife habitat. Defer would not provide a timber yield during this harvest.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded in the northeast by a class II buffer and in the north by a low site area. The balance of the unit is laid out as a logical skyline unit.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Class II area buffered. Class III area to the east avoided during layout.
BMP 18.1: Reserve trees provide habitat structure for martin, black bear, red-breasted sapsucker.

Forest Productivity Activities:

During precommercial thinning of younger stands favor y. cedar and Sitka spruce when found. Remove any reproduction that is infected with dwarf mistletoe.

MONITORING PLAN

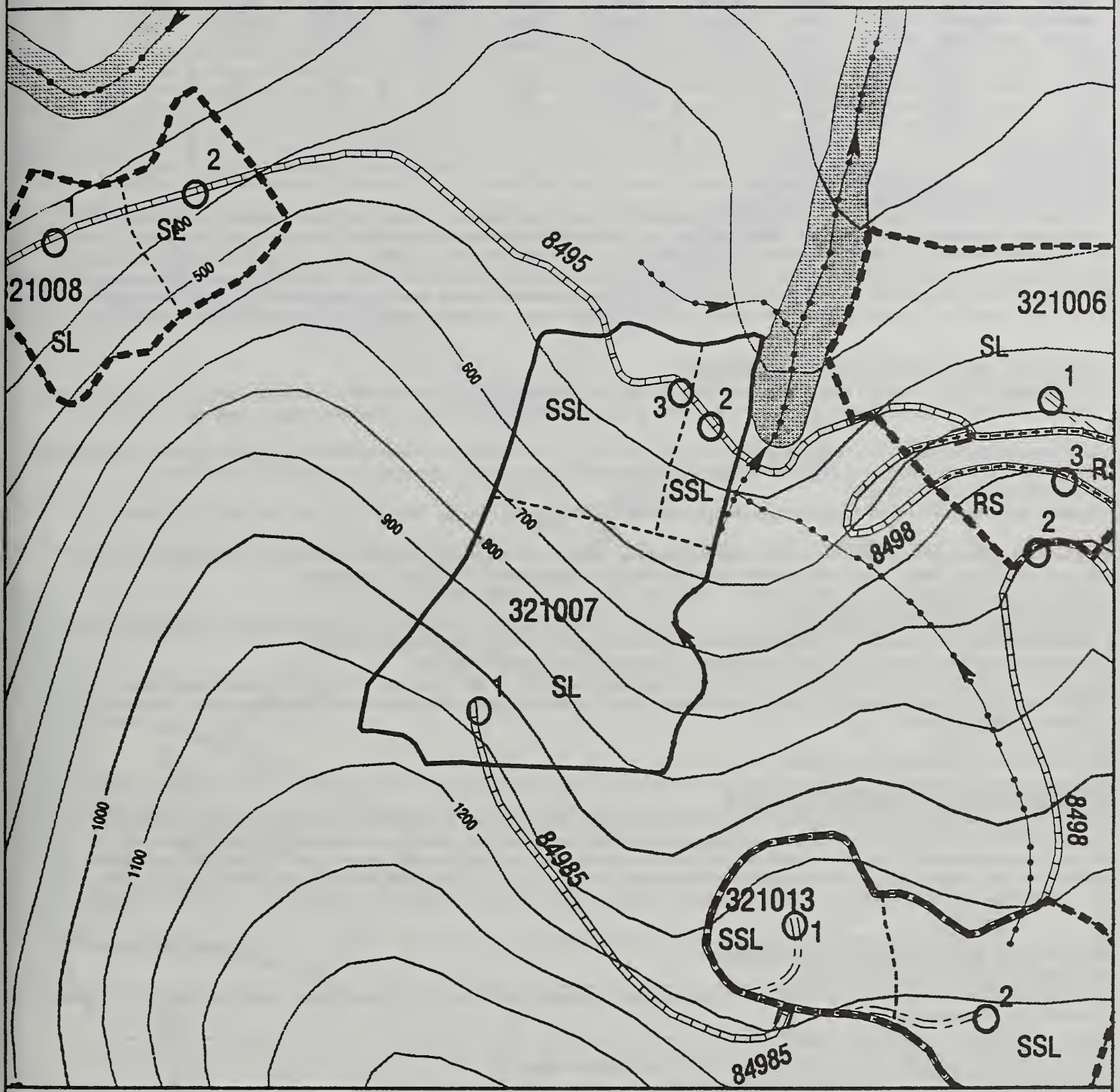
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321007 ALTERNATIVE(S): C

ACRES: 46.87 TOTAL NET MBF: 897.6 QUAD(S): SUM85 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 117



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321008 MAP #: 53 ACRES: 49

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 48 PHOTO #'S: 684-117

ALTERNATIVE(S): B

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	-	0%	-	-	-	-		-	-	-
VC-5	27.0	1.1	5%	H	140 110	60	M	M	M	M	L
VC-6	39.5	18.2	89%	H	140 130	65	H	G	H	H	M
VC-7	56.8	1.1	5%	H	120	75	M	G	L	H	M
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		20.4	100%	-	-	68	H	G	Mistletoe	H	M

STAND CHARACTERISTICS

Even aged functional stand in the w. hemlock series. This stand also has Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 70% on a NW aspect which are bisected by 1 significant V-notch class III creek. The northwest line of the unit is bounded by a large low site/muskeg area . Overstory ages are 200 to 300 years old with moderate defect and significant amounts of mistletoe, mechanical/animal damage, and windthrow. In the south portion of the unit, the understory is 20-40% stocked with 25+ year old w. hemlock and Sitka spruce which is of good vigor and quality. Ground cover is moderate to dense Vaccinium associated with rusty menziesia, skunk cabbage and devils club. Significant windthrow found in the southwest corner resulted in stand of reproduction. Site is good over the unit as a whole. Mistletoe is limited to lower slopes on the northern portion of the unit.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: 70-90 foot tower slackline. Unit altered to avoid fish bearing streams in the northeast corner, to avoid Goshawk area, and locate the unit to mitigate visual concerns. Unit not suited for partial cut. Snag retention is a safety hazard. Skyline extensions outside unit. Multiple achors may be required.

Visual Resource Management: VQO: Partial Retention. Viewed from small boat route on Port Houghton. Cumulative impacts w/ other units results in modification beyond VQO. Reduce impacts by dropping units, Partial retention, round or feathered edges - round corners. (Unit was reduced in size during layout- partial mitigation.)

Soils / Geology: Class III soils rating.

Fisheries / Watershed: Recommend suspending logs over or split yarding from V-notch in unit. This was done. Class II stream alongside unit is buffered.

Wildlife: Suitable habitat for red-breasted sap sucker, martin, and black bear. Reserve trees and snags to maintain habitat diversity. Avoid disturbance to nesting goshawks known to be in vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No Concerns

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class 5 with diseased, mature overstory for programmed timber yield.
(2) Regeneration of stand in volume class 6, that has significant recent mortality, for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention on southeast portion of unit, in volume class 6, by using feathered edges between settings
(4) Retain minor amounts of green cull or high defect trees in the volume class 5 & 6 areas for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.
(6) Split yard away from significant class III V-notch creek.

RATIONALE FOR ALTERNATIVE SELECTION

Clear cut with reserves was selected because it best meets resource objectives: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserves individual trees when feasible and provides feathere or scalloped edges between settings, especially on the upper slope that may be visible from Port Houghton. Provides good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts. Reserves should be green culls or less common species such as Sitka spruce or yellow cedar, when found. Feathered edge between settings will retain about 3 to 4 acres of timber on the upper slopes of the unit above the road. The feathered edge and the Class III V-notch should be the boundary between settings. this retention will lend itself to "split yarding" away from the V-notch.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded to the north by a class II buffer and low site area, to the west by advanced reproduction, to the east by a change in slope and aspect an to the south by the extent of yarding capabilities.

Soil, Water, and Wildlife Conservation:

BMP 13.16: Split yard away from V-notch creek and retain timber on feathered edge along creek.
BMP 13.2: Harvest design ensures water quality and soil productivity.
BMP 18.1: Maintain vertical stand structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Retain patches of advanced reproduction.
(3) Schedule precomercial thinning. Favor S. spruce and Y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

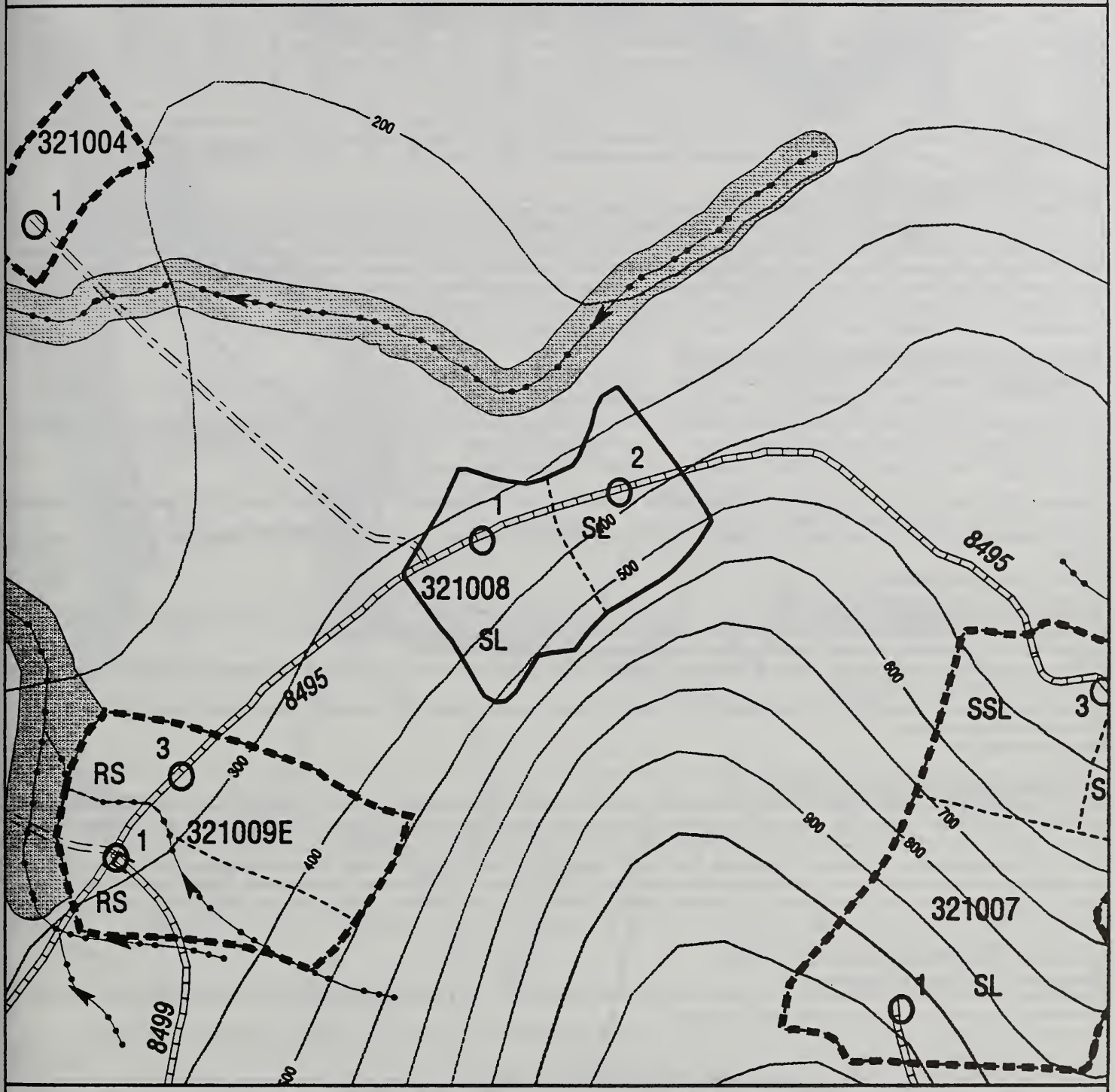
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321008 ALTERNATIVE(S): B

ACRES: 20.49 TOTAL NET MBF: 649.1 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 117



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:33:21.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321009 E, W MAP # 61, 56 ACRES: 44

AERIAL PHOTO YEAR: 1989 FLIGHT LINE: 24 PHOTO #'S: 888-196

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	9.5	22%	H	110	45	L	MP	M	M	L
VC-5	27.0	9.6	22%	H	140	55	M	M	M	H	L
VC-6	39.5	24.5	56%	H	140 320	65	H	G	M	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		43.6	100%	-	-	58	M	M	Mistletoe	H	M

STAND CHARACTERISTICS

West Subunit: Mosaic stand in the w. hemlock series. **West Subunit:** Functionally evenage stand in the w. hemlock and S. spruce series with minor amounts y. cedar in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 50% on aspects from W to NW which are bisected by 1 significant class-I V-notch creek which bounds and splits the unit into east and west subunits. Overstory ages are 150 to 320 years old with moderate defect and significant amounts of mistletoe, mechanical/animal damage windthrow. The understory is <20% stocked with 20+ year old w. hemlock and Sitka spruce which occur in groups with poor to fair vigor. Ground cover is sparse to dense *Vaccinium* associated with devils club, skunk cabbage. Scattered new windthrow found throughout the unit. Site is fair to good over the unit as a whole. The east subunit is predominately dense hemlock in the volume class 6 level. The western subunit is more a mosaic of volume class 4, 5, and 6 on gentler slopes and between a major class II stream and the previously mentioned class I fork of that stream.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Settings 1 & 2 Running skyline, settings 1 &3 90" tower. Unit is bisected into east and west sub units by a class II fish stream and buffer. South side of western unit suitable for partial cut. Fall timber away from buffer. 20 Sta. of temp road that crosses stream buffer.

Visual Resource Management: VQO: Partial Retention. Viewed from small boat route on Port Houghton. Cumulative impacts w/ other units results in modification beyond VQO. Reduce impacts by dropping units, Partial retention, round or feathered edges - round corners. (Unit was reduced in size during layout) mitigation.)

Soils / Geology: USFS originally mapped as class III soil stability in east area. Soil class should be lower class II.

Fisheries / Watershed: Class I and III streams identified and buffered. Unit split in two parts to accommodate buffers. Retain 50 percent of the shade producing vegetation on the E, S, SW and W banks of Class III streams.

Wildlife: Suitable habitat for red-breasted sapsucker, marten, and black bear. Reserve trees and snags to maintain habitat diversity. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class 4 & 5 with diseased, mature overstory for program timber yield.
(2) Regeneration of stand in volume class 6, that has significant recent mortality, for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention on center portion of the eastern subunit, in volume class 6, by using feathered edges between settings and rounding unit corners on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the south setting/ western subunit for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected for the east **subunit** and southern portion of the western subunit because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees when feasible and feather or scallop edges between settings especially on the upper slope that may be visible from Port Houghton. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Reserves should be green culls or less common species such as Sitka spruce or yellow cedar, when found. Feathered edge between settings in the east subunit will retain about 3 to 4 acres of timber on the upper slopes of the unit above the road. Also during final layout round the corners of the unit on the upper slopes. **West subunit:** Southern setting is clearcut with reserves to retain vertical and cavity habitat structure. This retention will also assist soil mixing during windthrow events. Leave green culls and high defect hemlock and a proportional amount of S. spruce and Y. cedar when found. Clearcut for north setting so that a side by side comparison is available for retention areas.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East subunit: Bounded to the west by class II buffer to the south by a class III creek and to the north and east by reserve settings. The unit was reconfigured and reduced in size from the paper plan to mitigate creek buffers and visual impacts.
West subunit: This area triangle shaped and is bounded by the fork of a class I steam buffer on two sides and a logical logging system boundary to the south

Soil, Water, and Wildlife Conservation:

BMP 13.3: Unit split to buffer class I stream. Close spur roads. Waterbar and seed as needed.
BMP 18.1: Wildlife habitat improvement planning--reserve trees and snags.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Retain patches of advanced reproduction.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321009 ALTERNATIVE(S): B C

ACRES: 25.96 TOTAL NET MBF: 748 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 24 ROLL NO.: 888 PRINT NO.: 196



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 82 | UNIT #: 321010 | MAP #: 65 | ACRES: 33

AERIAL PHOTO YEAR: 1989 | FLIGHT LINE: 24 | PHOTO #'S: 888-196 | ALTERNATIVE(S): C, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	20.5	62%	H HC	110 120	60	L	MP	M	M	L
VC-5	27.0	12.8	38%	H	110	75	M	M	H	H	L
VC-6	39.5	-	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		33.3	100%	-	-	66	L	MP	Mistletoe	M	L

STAND CHARACTERISTICS

Mosaic of two evenage functional stands in the w. hemlock and mixed conifer series. This stand also has minor amounts of Sitka spruce and mt. hemlock in the overstory. The stand is composed of medium to large, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 30% on a NW aspect. The eastern portion of the unit is bounded by a significant class I V- notch buffer. Overstory ages are 250 to 275 years old with moderate to high defect and significant amounts of mistletoe, mechanical/animal damage, and old defoliation resulting in dead tops The understory is 20-40% stocked with 20 to 30 year old w. hemlock and Sitka spruce which occurs in a group in the volume class 4 area with good vigor. Ground cover is sparse to dense *vaccinium* associated with rusty menziesia. Scattered new windthrow found throughout. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline yarder. Moderate slopes. Temporary road required.

Visual Resource Management: VQO partial retention/maximum modification. Viewed in the background from small boat route. Foreground trees should minimize visual impacts. Should meet VQO.

Soils / Geology: No concerns.

Fisheries / Watershed: No streams in unit. Northeast area bounded by a class I stream/V-notch buffer.

Wildlife: Suitable habitat for red-breasted sap sucker, martin, and black bear.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class 4 & 5 with diseased, mature overstory for program timber yield.
(2) Regeneration of stand in volume class , that has significant infestation of dwarf mistletoe, for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by reconfiguration and reduced unit size.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut best meets resource objectives because: (1) Provides a high volume return from a stand that is past its peak productivity. (2) Reduces or eliminates dwarf mistletoe in new stand, almost all trees have some infection. 3) Provides an adaptive management side-by-side comparison with adjacent retention areas. 4) Provides for species diversity through retention of Sitka spruce and yellow cedar along the unit boundary for seed source. 5) Allows for retention of the patch of thrifty advanced reproduction in the south setting against the west line.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The east boundary is defined by a class I V-notch buffer and reserve area. The west boundary is defined by low site lands and the headwaters of a class I buffer.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Class I stream buffer is above V-Notch area to protect steep sideslopes.
BMP 13.5: Directional felling away from stream buffer and steep V-notch.

Forest Productivity Activities:

(1) Retain patches of advanced reproduction.
(2) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(3) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

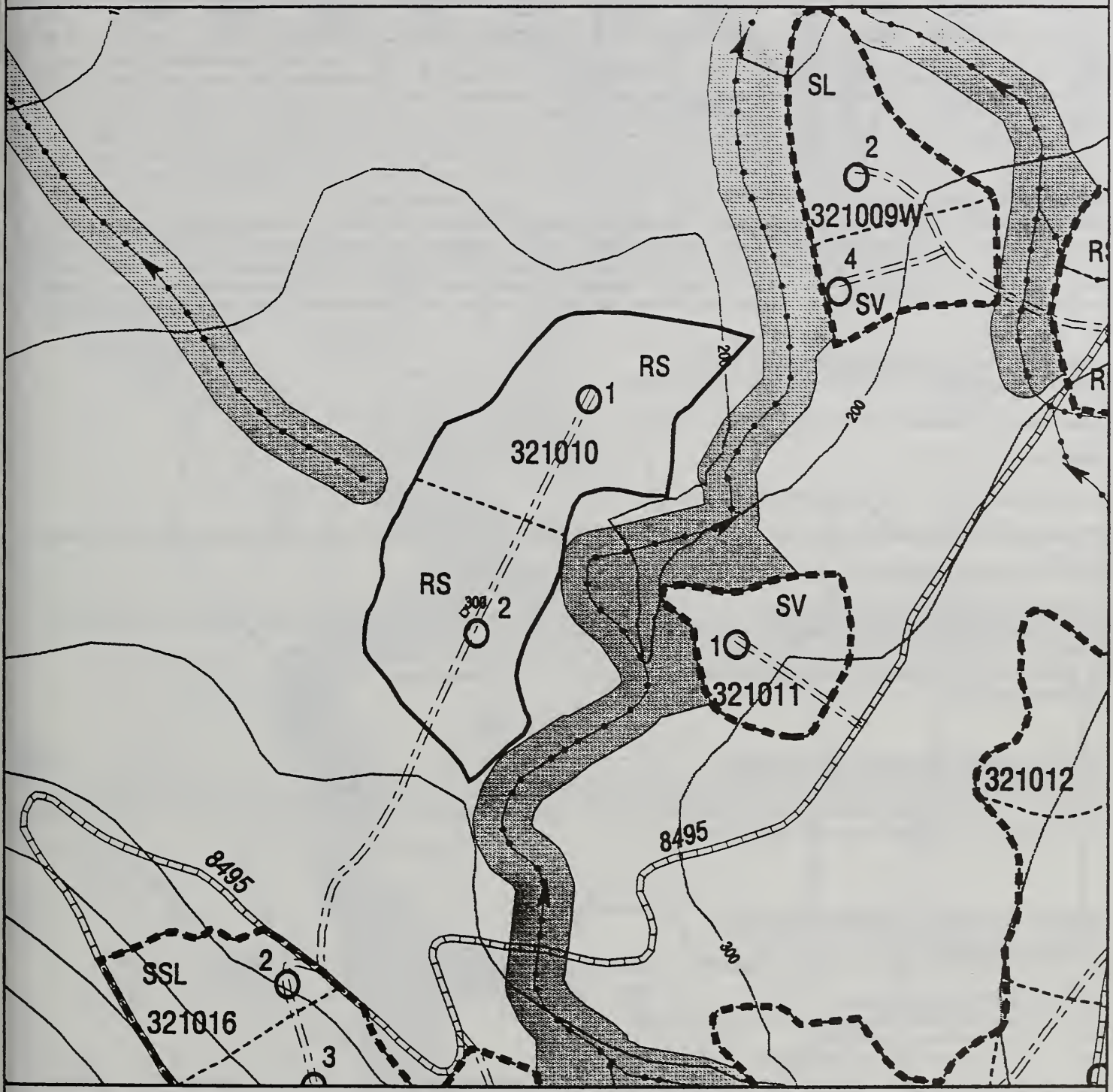
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321010 ALTERNATIVE(S): C D

ACRES: 33.35 TOTAL NET MBF: 546.6 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 24 ROLL NO.: 888 PRINT NO.: 196



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321011 MAP #: 70 ACRES: 9

AERIAL PHOTO YEAR: 1989 FLIGHT LINE: 24 PHOTO #'S: 888-196

ALTERNATIVE(S): C, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	-	0%	-	-	-	-	-	-	-	-
VC-5	27.0	9.0	100%	HC	220-230	60	M	G	L	H	M
VC-6	39.5	-	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		9.0	100%	-	-	60	M	G	Mistletoe	H	M

STAND CHARACTERISTICS

Functionally even aged stand in the w. hemlock/y. cedar series. This stand also has scattered Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 35% on a NW aspect The western portion of the unit is bounded by a large class II V-notch creek. Overstory age is 300 +/- years old with moderate defect and significant amounts of mistletoe, mechanical/animal damage, old defoliation leaving dead tops and windthrow. The understory is <20% stocked with 20 to 80 year old W. hemlock and Sitka spruce which occur in groups throughout with poor vigor. Ground cover is moderately dense *Vaccinium*, associated with devils club skunk cabbage, and shield fern. Scattered new windthrow found throughout. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Shovel logging unit. Buffer on west boundary.

Visual Resource Management: VQO Maximum modification. No concerns.

Soils / Geology: No concerns.

Fisheries / Watershed: Class I stream identified and buffered.

Wildlife: Suitable habitat for red-breasted sapsucker, marten, and black bear. Reserve trees and snags to maintain habitat diversity. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class 5 with diseased, mature overstory for program timber yield.
(2) Mitigation of steep slopes on V-notch. Unit flagged above the slope break and away from excessively steep slopes.
(3) Retain minor amounts of green cull or high defect trees for vertical stand structure and cavity nesting habitat.
(4) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clear cut with reserves best meets objectives for the stand because: (1) Provides a high volume return from a stand that is passing its peak productivity.(2) Reserves individual trees to provide good phenotypes for vertical and cavity nesting habitat structure and visual softening of visual impacts. Reserves should be green culls or less common species such as Sitka spruce or yellow cedar, when found.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded by a bend in a class I creek to the west and north. The balance of the unit to the east is bounded by generally low site lands.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Class I buffer laid out above crest of V-notch. Close spur road.
BMP 13.5: Directional felling away from buffer.
BMP 18.1: Maintain vertical structure and snag density.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Retain patches of advanced reproduction.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321011 ALTERNATIVE(S): C D

ACRES: 9.01 TOTAL NET MBF: 215.5 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 24 ROLL NO.: 888 PRINT NO.: 196



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321012 MAP #: 73 ACRES: 73

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 48 PHOTO #'S: 684-116

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	21.2	29%	H	110 115	50	L	P	-	L	L
VC-5	27.0	5.6	8%	H	110	55	L	M	-	M	L
VC-6	39.5	46.0	63%	H	110 130	68	H	G	-	M	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low.	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		72.8	100%	-	-	62	M	M		M	M

STAND CHARACTERISTICS

Uneven age multiple storied stand in the W. hemlock series. This stand also has minor amounts of Sitka spruce, Y. cedar in the overstory. The stand is composed of medium size, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 50% on aspects from W to SW which are bisected by 2 significant V-notch creeks at the north end of the unit. The southwestern portion of the unit is bounded by a Class II V-notch buffer. Overstory ages are 150 to 275 years old with moderate defect and significant amounts of conk, mistletoe, mechanical/animal damage and some defoliators. The understory is 41-60% stocked with 20+ year old W. hemlock which occur in patches throughout with fair to good vigor except those infected with dwarf mistletoe. Ground cover is moderate to dense vaccinium associated with rusty menziesia ad skunk cabbage. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running skyline in all settings. Directional falling away from V-notches. Unit is not suitable for partial cut. Temp road required.

Visual Resource Management: VQO Partial Retention. Max Modification next to stream. Viewed from middle ground of ferry route-7 miles. Cumulative impact with adjacent units results in modification. Reduce impacts by dropping or modifying units, partial cut or retention, and/or shaping units with rounded tops- no square corners. Priority 2.

Soils / Geology: No concerns listed.

Fisheries / Watershed: No fish streams in unit. 100 foot buffer on adjacent class II stream. No other concerns.

Wildlife: Goshawk survey conducted. No response. Noted several species of songbirds. Moose tracks. Bear sign. Suitable habitat for red breasted sap sucker and black bear. Recommend leaving live trees and snags. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: Checked report of y. cedar CMT near NW corner of unit on 8/3/94. Found 2 CMT's outside of unit at 360 & 370 foot elevation. No CMT's observed in unit.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings and rounding unit corners on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the south setting for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves and Clearcut was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on lower slopes below the road when feasible and scallop edges between settings especially on the upper slope that may be visible from Port Houghton. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls or less common species such as Sitka spruce or yellow cedar, when found. Scalloped edge between settings and rounded corners on the upper portion of the unit will retain about 3 to 4 acres of timber on the upper slopes of the unit above the road. Selection and shelterwood not feasible with logging system and not reasonable due to infestation of dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded by class III V-notch to southwest and muskeg/low site to west. Bounded by logical reserve settings adjacent to 321009 and 321199 to the north and south respectively. East boundary is adjacent to class IV soils area.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Directional falling away from class II stream buffer. Close spur road, waterbar and seed as needed.
BMP 13.3: TTRA buffers on Class II stream.
BMP 18.1: Retain snags for wildlife use.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precommercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

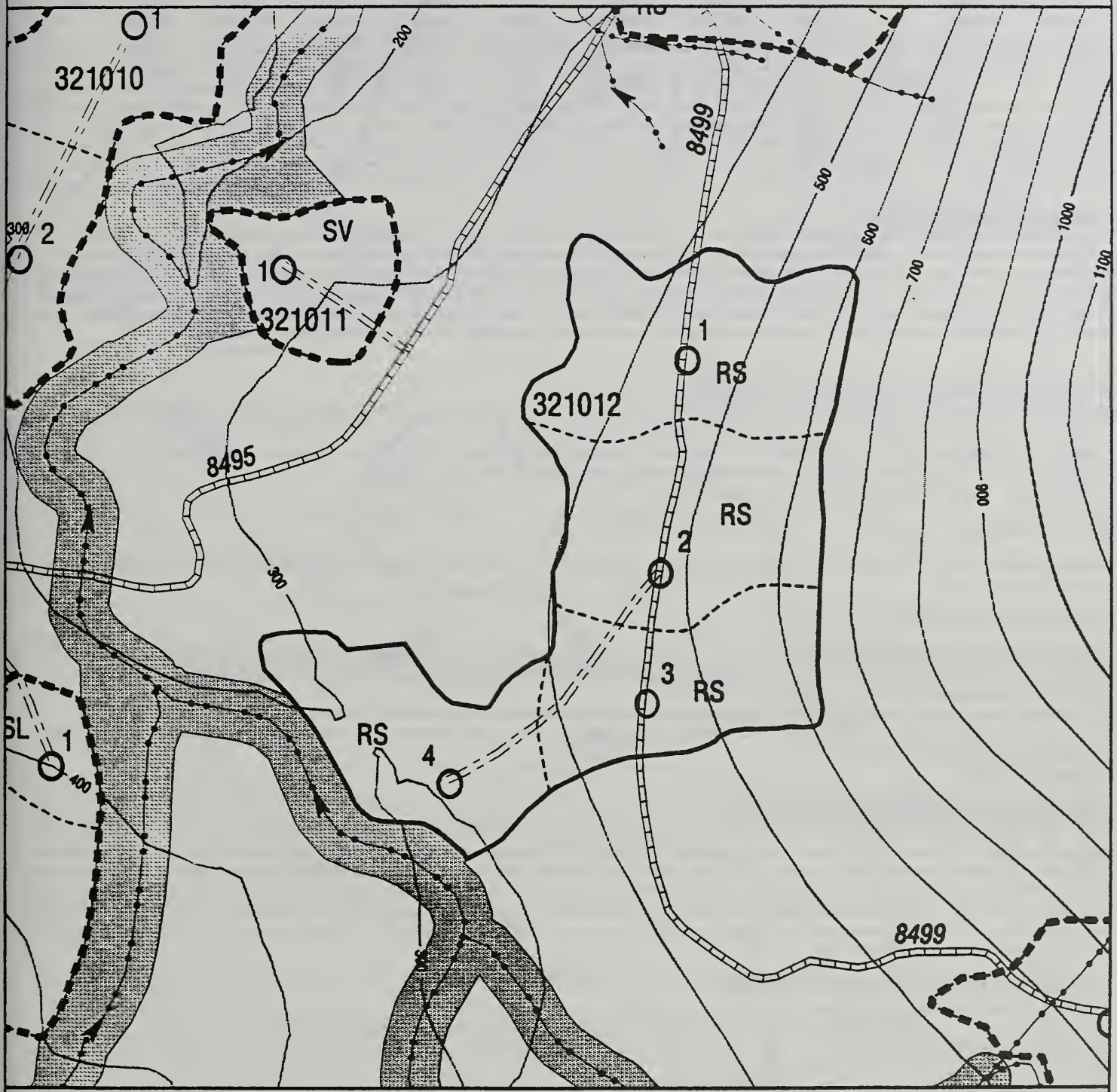
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321012 ALTERNATIVE(S): B C D

ACRES: 72.82 TOTAL NET MBF: 1954.6 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 116



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.21:02:27.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 82 | UNIT #: 321013 | MAP #: 72 | ACRES: 27

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 49 | PHOTO #'S: 684-125 | ALTERNATIVE(S): B, C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	2.7	10%	HC	230	42	L	MP	M	M	L
VC-5	27.0	17.1	64%	H HC	130 230	52	M	M	M	H	M
VC-6	39.5	4.0	15%	H	130	62	H	G	L	H	M
VC-7	56.8	-	0%	-	-		-	-	-	-	-
Low	5.0	3.1	12%	XC	430	32	L	P	L	L	L
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		26.9	100%	-	-	46	M	M	Wind	H	M

STAND CHARACTERISTICS

Mosaic stand in the w. hemlock and w. hemlock/y. cedar series with a significant Sitka spruce component. A small low site area is included in the unit. The stand is composed of medium to large, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 55% with a few sort pitches up to 90% on aspects from N to NW. Ground is broken with small sharp ridges and small class 3 creeks The low site area is located in the northwest corner of the unit Overstory ages are 280 to 320 years olds old with moderate to high defect and significant amounts of conk mechanical/animal damage, old defoliation leaving dead tops, and windthrow. The understory is <20% stocked with 20+ W. hemlock and Sitka spruce which occur in groups throughout with poor to fair vigor. Ground cover is sparse to dense vaccinium associated with skunk cabbage. Significant new windthrow found throughout. Site ranges from poor to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit boundaries conform to logical yarding limits. Not suitable for partial harvest. Retain understory and green cull between settings for visual and wildlife mitigation. Snag retention is a safety issue. Temporary road construction needed.

Visual Resource Management: VQO Partial Retention. Viewed in the middleground from small boat route Viewed from the fairy in the background. results in modification exceeding VQO. Reduce impacts by reconfigure and retention in this and adjacent units. Priority 1

Soils / Geology: No concerns listed in the post field comments.

Fisheries / Watershed: Stream trough the north portion of the unit is a class III V-notch.

Wildlife: Habitat for Vancouver Canada goose, red breasted sap sucker, black bear. Use reserve trees and snags to maintain habitat structure. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4,5 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings and rounding unit corners on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the south line and low site area in west setting for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit, especially on the upper slope that may be visible from Port Houghton, will meet VQO. In addition, tall timber (up to 130 ft. in height) to the north of the unit will partially hide the harvest area from view. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system and not reasonable due to infestation of dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

This unit is bounded by a broad switchback in road 8498 to the south, west and north. The east boundary is a topographic yarding limit.

Soil, Water, and Wildlife Conservation:

BMP 12.7: Close spur roads, waterbar and seed as needed.
BMP 13.5: Directional felling away from Class III V-notched stream.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

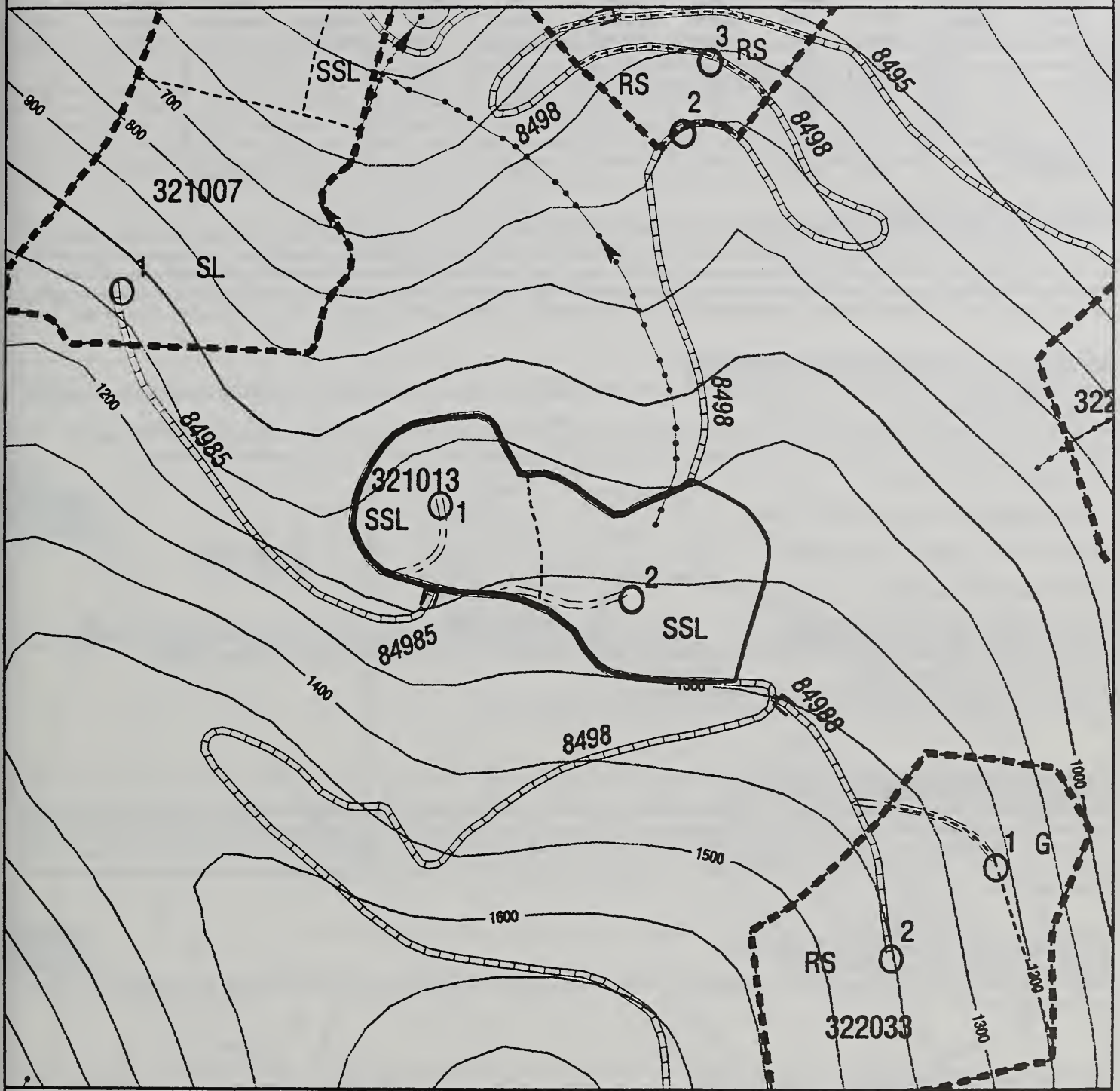
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321013 ALTERNATIVE(S): B C

ACRES: 26.9 TOTAL NET MBF: 587.3 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 125



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321014 MAP #: 77 ACRES: 14

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 47 PHOTO #'S: 684-106

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	-	0%	-	-	-	-	-	-	-	-
VC-5	27.0	0.2	1%	H	110	50	M	G	L	H	L
VC-6	39.5	13.4	99%	H	110	57	M	G	L	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		**13.6**	**100%**	-	-	**54**	**M**	**G**	Mistletoe	**H**	**M**

STAND CHARACTERISTICS

Two-storied stand in the w. hemlock series with a Sitka spruce and y. cedar component. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp in the older overstory trees. Slopes range from 20 to 40% on aspects from NW to W bisected by two small streams. The western portion of the unit is bounded by a ridgetop facing Port Houghton. Overstory ages are 160 to 300 years old with low defect in the codominant trees and very high defect in the scattered dominants with significant amounts of conk, dead tops and trace amounts of mistletoe The understory is <20% stocked with w. hemlock in groups throughout with poor to fair vigor. Ground cover is, moderate to dense vaccinium associated with rusty menziesia, devils club and skunk cabbage. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit boundary modified to logical yarding limits and to mitigate visual impacts. Snag retention is a safety issue. 245 foot temporary spur easy construction. Gravity return system.

Visual Resource Management: VQO partial retention. Viewed from the middle ground of Port Houghton ferry route. Cumulative impacts with other units result in modification exceeding VQO. To mitigate: 1) Drop or reconfigure units. 2) Partial cut. 3) Leave green culls for contrast. 4) Round unit corners. Priority 1

Soils / Geology: No concerns listed.

Fisheries / Watershed: No streams in unit- no concerns.

Wildlife: Habitat for Black Bear- no other concerns.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by shelterwood retention.
(4) Retention of green cull or high defect trees for vertical stand structure and cavity nesting habitat.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: 1) Provides a moderately high yield from a defective stand with high potential and low current net productivity; 2) Reserve tree selection provides large defective hemlock and a proportional amount of Sitka spruce of good phenotype for vertical and cavity nesting habitat structure, seed source for S. spruce, and visual softening of harvest impacts. Logging systems are suited for the prescribed partial harvest. Clear cut would provide 10%+ more volume yield but less regeneration of S. spruce without planting and would not contribute to the retention of stand structure for habitat and visual mitigation. Defer would not regenerate stand or provide timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northern boundary is road 8495. The balance of the unit is bounded by the logical yarding limits. Unit was greatly modified from the original plan due to logging constraints and visual considerations.

Soil, Water, and Wildlife Conservation:

BMP 13.2: Timber harvest design secures favorable water quality soil productivity and minimizes erosion and sedimentation.
BMP 13.19: Seed Tree retention for faster regrowth.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown of reserve trees.
2) Scheduled precommercial thinning- during thinning favor S. spruce when found.
3) Supplement reforestation of S. spruce if needed to increase production and diversity of successor stand.

MONITORING PLAN

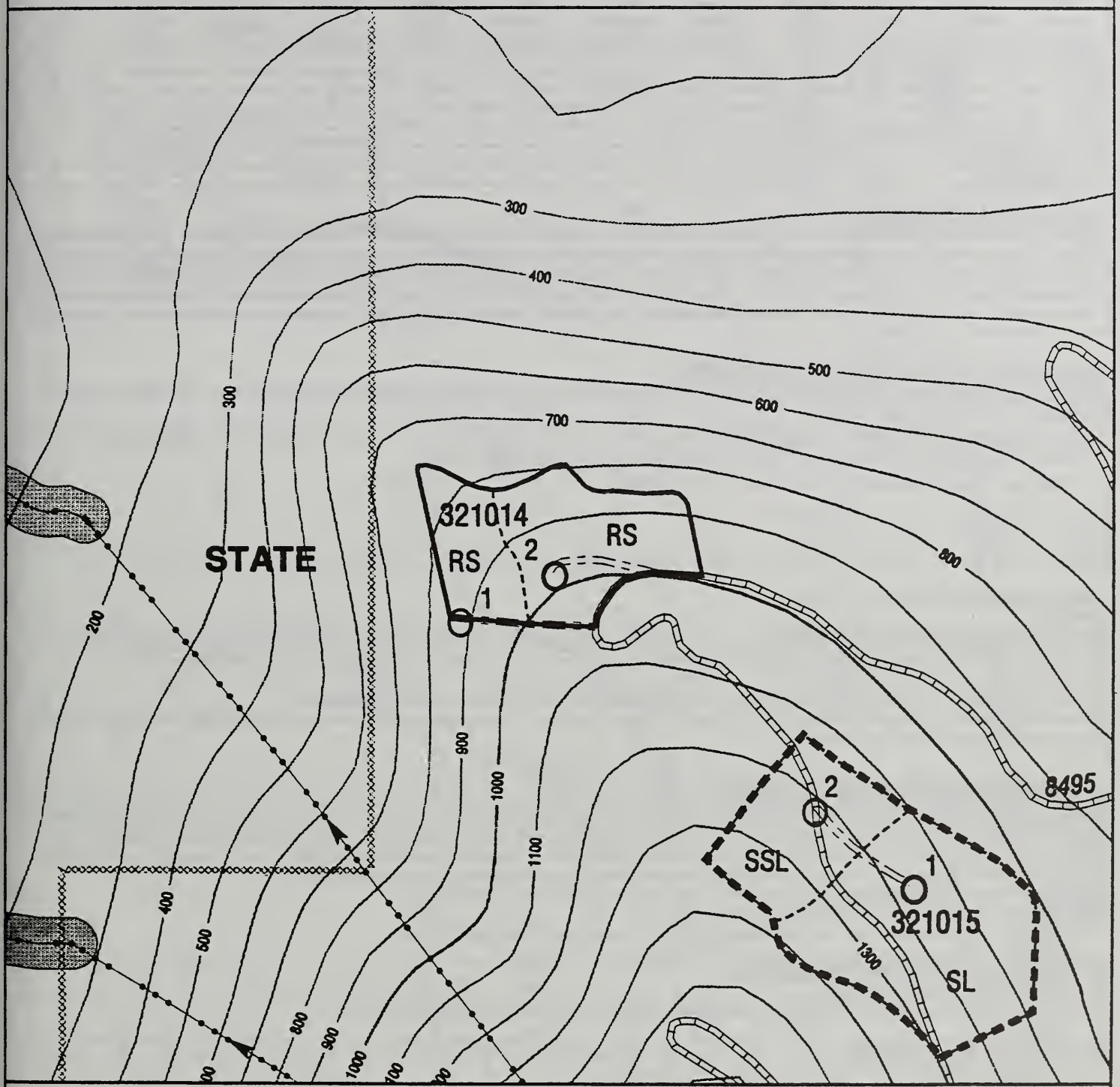
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 85 UNIT: 321014 ALTERNATIVE(S): C

ACRES: 13.56 TOTAL NET MBF: 461.6 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 47 ROLL NO.: 684 PRINT NO.: 106



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321015 MAP #: 85 ACRES: 24

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 47 PHOTO #'S: 684-106

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	-	0%	-	-	-	-	-	-	-	-
VC-5	27.0	6.2	25%	H HC	250 210	56	M	M	-	H	M
VC-6	39.5	18.2	75%	H HC	250 210	56	M	M	-	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		24.4	100%	-	-	56	M	M	-	H	M

STAND CHARACTERISTICS

Even aged functional stand in the w. hemlock and w. hemlock/y. cedar series. This stand also has trace amounts of Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 50% with a NE aspect which are bisected by several small creeks and ridges. The western portion of the unit is bounded by a ridgetop. Overstory ages are 290 to 320 years old with very high defect and significant amounts of conk, mechanical/animal damage, old tree top defoliation, and scattered windthrow. The understory is <20%, stocked with 20 to 80 year old W. hemlock which occur in groups throughout with poor to fair vigor. Ground cover is sparse to dense vaccinium associated with rusty menziesia, devils club and shield fern Significant new windthrow found throughout the unit. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: East setting 90 foot tower slackline. West setting small slackline. Not suitable for partial cut. Snag retention is a hazard. 5 Sta. temporary road required. Yarding will interfere with traffic on 8495 line.

Visual Resource Management: VQO Partial retention. Viewed in the middleground from ferry route. Cumulative impacts with adjacent units. Reduce impacts by 1/3 to 1/2 by dropping units, partial cutting, retention of green culls, or reconfiguring unit by rounding corners. Priority 1.

Soils / Geology: Mapped originally as soil hazard class III, should be class II.

Fisheries / Watershed: No streams. No concerns.

Wildlife: Use reserve trees to maintain habitat structure. Suitable habitat for brown creeper and black bear. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings and rounding unit corners on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the south line and low site area in west setting for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on upper slopes along the SW line above and below the 8495 road when feasible and scallop edges between settings on the upper slope that may be visible from Port Houghton. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls, y. cedar or less common Sitka spruce when found. Also during final layout round edges of unit for visual mitigation.
Tall timber to the north of the unit will partially hide the unit from view. trees are 100-1115 feet in total height
Shelterwood and group selection are not feasible with logging system.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The boundary is defined by logical yarding limits and provides some mitigation for visuals due to the limited size of the unit.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Protect sensitive soil areas.
BMP 18.1: Maintain cavity nesting snag structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precommercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

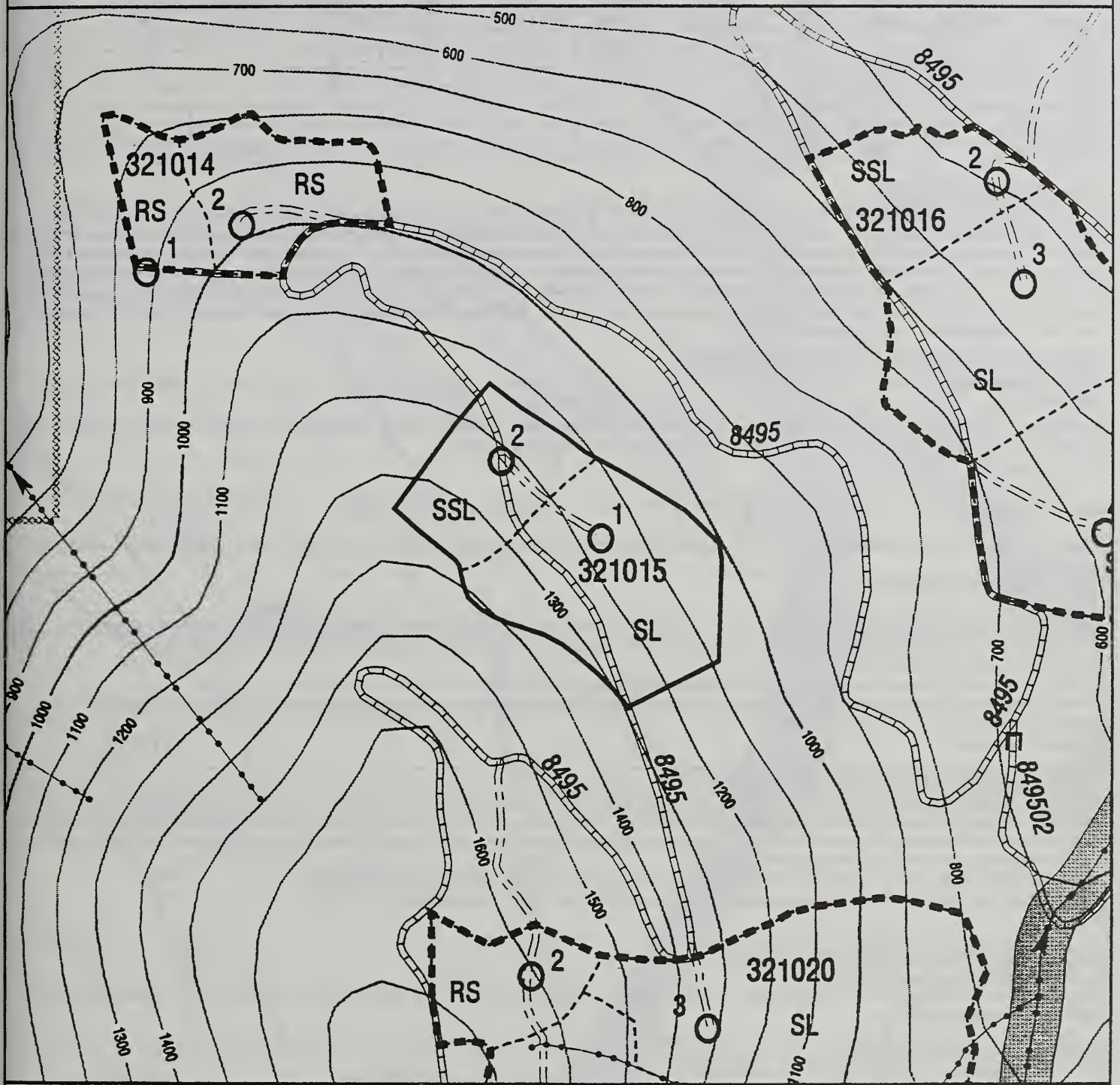
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321015 ALTERNATIVE(S): C

ACRES: 24.33 TOTAL NET MBF: 768.4 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 47 ROLL NO.: 684 PRINT NO.: 106



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321016 MAP #: 78 ACRES: 58

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 47 PHOTO #'S: 684-106

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	13.7	24%	H HC	110 210	44	L	MP	L	M	L
VC-5	27.0	18.4	32%	H	110	52	M	M	L	H	M
VC-6	39.5	26.1	45%	H	110 130	57	M	M	-	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		58.2	100%	-	-	52	M	M	Mistletoe	H	M

STAND CHARACTERISTICS

Even aged functional stand in the volume class 5 and 6 stands which are in the w. hemlock series, and two storied in volume class 4 which is in the w. hemlock/y. cedar series. This stand also has significant amounts of Sitka spruce in the overstory. The stand is composed of small to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 50% on aspects from N to NE which are bisected by a significant V-notch creek. The eastern portion of the unit is bounded by a large class II V-notch buffer. Overstory ages are 300 to 330 years old with moderate defect and significant amounts of conk, mistletoe, mechanical/animal damage, defoliators that have killed the tops of trees, and windthrow. The understory is 20-40% stocked with 20 to 60 year old W. hemlock in groups throughout with poor to fair vigor. Ground cover is sparse to dense vaccinium associated with rusty menziesia and skunk cabbage. Significant new windthrow found scattered throughout the unit. Site ranges from poor in the VC4 area to good over the balance of the unit.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Slackline and small slackline with 70 to 90 foot tower on four settings. Not suited for partial cut. Skyline extensions will be needed across creek. Snag retention is a safety issue. 15 Sta. temporary road. Yarding will block mainline.

Visual Resource Management: VQO partial retention and max modification along the creek. Cumulative impacts with adjacent units result in modification exceeding VQO. Mitigate by, dropping units, partial cut, leaving green culls, reconfigure unit with round corners. Priority 1.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Intensive survey completed. Minimum 120 foot buffers- with consideration for slope on V-notch.

Wildlife: Use reserve trees and snags to maintain habitat. Suitable habitat for red breasted sap sucker, marten and black bear. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4,5 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings and rounding unit corners on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the south line and low site area in west setting for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves and Clearcut were selected as best meeting resource objectives because: (1) Theyprovide a high volume return from a stand that is past its peak productivity. (2) They reserve some individual trees (green cull), specifically, on upper south slopes below the 8495 road and scallop edges between settings especially on the upper slope that may be visible from Port Houghton. (3) They provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts by reserving green culls, yellow cedar or Sitka spruce.
Shelterwood and group selection are not feasible with logging system and not reasonable due to infestation of dwarf mistletoe.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East and northeast bounded by a class II V-notch buffer. North line partially bounded by road 8495 and a muskeg/ low site area. Western boundary is generally defined by road 8495 and logical yarding limits.

Soil, Water, and Wildlife Conservation:

BMP 13.19: Yard away from, and not across, class III V-notch where possible.
BMP 12.6: Unit boundary maintained at least 100' away from Class II stream.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Retain patches of vigorous reproduction when found.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

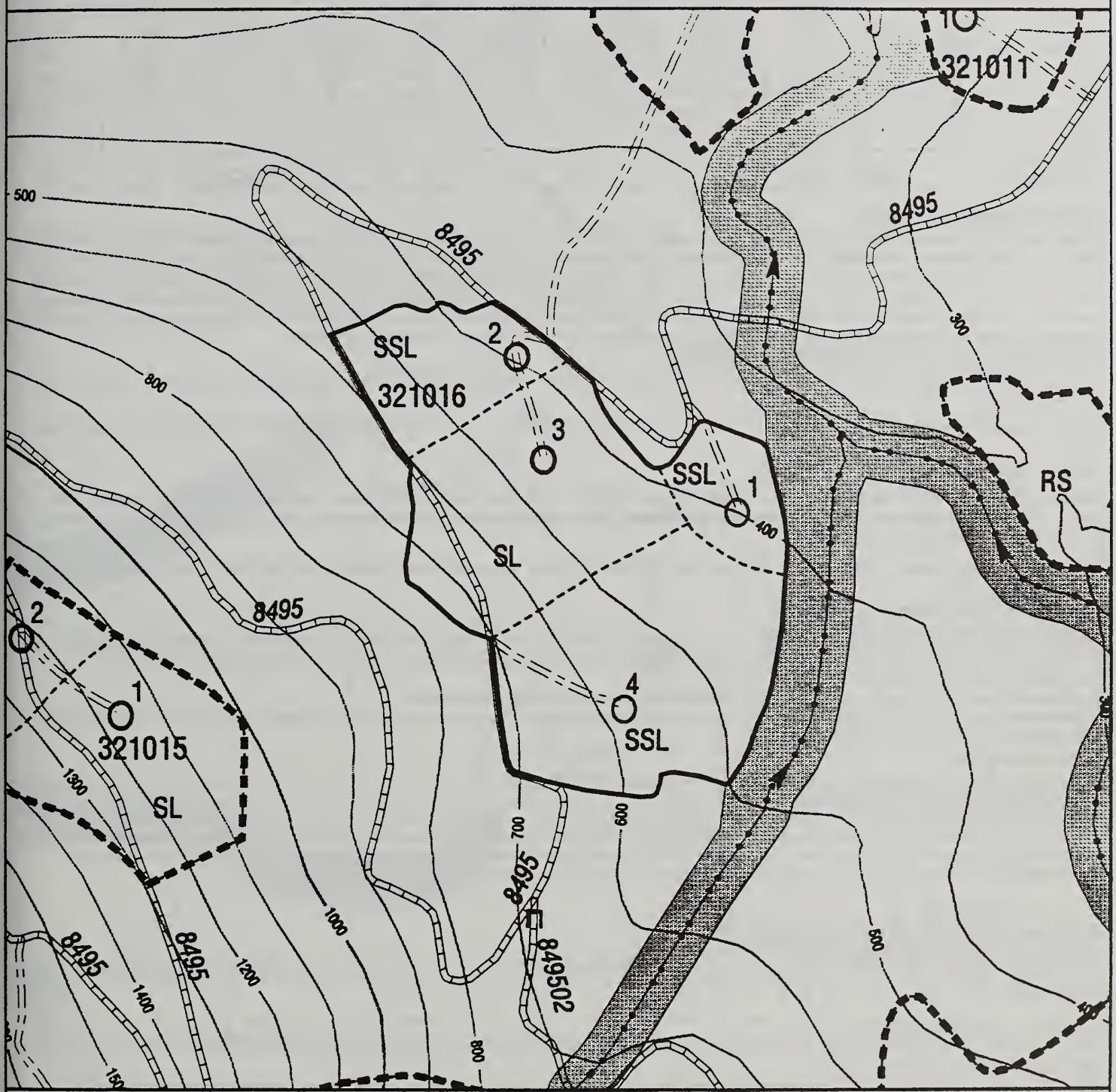
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321016 ALTERNATIVE(S): C

ACRES: 58.23 TOTAL NET MBF: 1493.8 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 47 ROLL NO.: 684 PRINT NO.: 106



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 82 UNIT #: 321017 MAP # 88 ACRES: 56

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 48 PHOTO #'S: 684-115

ALTERNATIVE(S): B, C, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	11.5	21%	HC	210	50	L	MP	M	M	L
VC-5	27.0	3.3	6%	HC	230	55	M	M	L	H	M
VC-6	39.5	41.0	73%	H HC	120 140	60	M	G	L	H	M
VC-7	56.8	-	0%	-	-	0	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		55.8	100%	-	-	58	M	G	Mistletoe	H	M

STAND CHARACTERISTICS

Uneven aged stand in the w. hemlock and w. hemlock/y. cedar series. This stand also has significant amounts of Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 90% on aspects from W to SW which are bisected by a significant V-notch creek. The western portion of the unit interfaces with two class II V- notch creeks. Overstory ages are 300 to 400 years old with high defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage, and minor windthrow. The understory is <20% stocked with 30 to 60 year old W. hemlock and Sitka spruce which occur in groups throughout with poor to fair vigor. A large area of more even and dense reproduction to the west was deleted from the unit during layout. Ground cover is moderate to dense vaccinium associated with devils club and skunk cabbage. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running Skyline for all settings. Directional falling away from V-notches is required. Unit modified due to limited deflection, stream buffers and low site area.

Visual Resource Management: VQO partial retention. Viewed in midground from ferry route. Unit is tucked behind the topography minimizing impacts. Should meet VQO.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Creeks are feed by several small high gradient channels in which there is high erosion potential. Recommend re-seeding the area and split yarding as to facilitate yarding away from creeks. This was done. Adjacent creeks were surveyed and buffered. Retain 50 percent of the shade producing vegetation on the E, S, SW and W banks of Class III streams.

Wildlife: Survey for n. goshawk- no response. Survey for marbled murrelet- high density. Recommend leaving green culls and snags for habitat. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4,5 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and watershed concerns by retention between settings at high gradient creeks.
(4) Retain minor amounts of green cull or high defect trees by feathering edges against the west line low site area for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves and Clearcut were selected because: (1) They provide a high volume return from a stand that is past its peak productivity.(2) They reserve individual trees (green cull) on lower west slopes below the 8499 road and along the steep gradient creeks below the road when feasible. (3) They provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Shelterwood and group selection are not reasonable due to infestation of dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

West line is bounded by class II buffers and low site area. Southern boundary is a class III creek. North and east boundaries are determined by logging feasibility and mapped hazard class IV soils.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Avoid yarding across V-notches. Add second landing, if feasible, in northern setting to accomplish split yarding on this area. Retain feathered edges below the road in these steep gradient areas.
BMP 12.17: Seed steep gradient creeks after harvest with Sitka alder.
BMP 18.1: Reserve trees for snag recruitment and habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

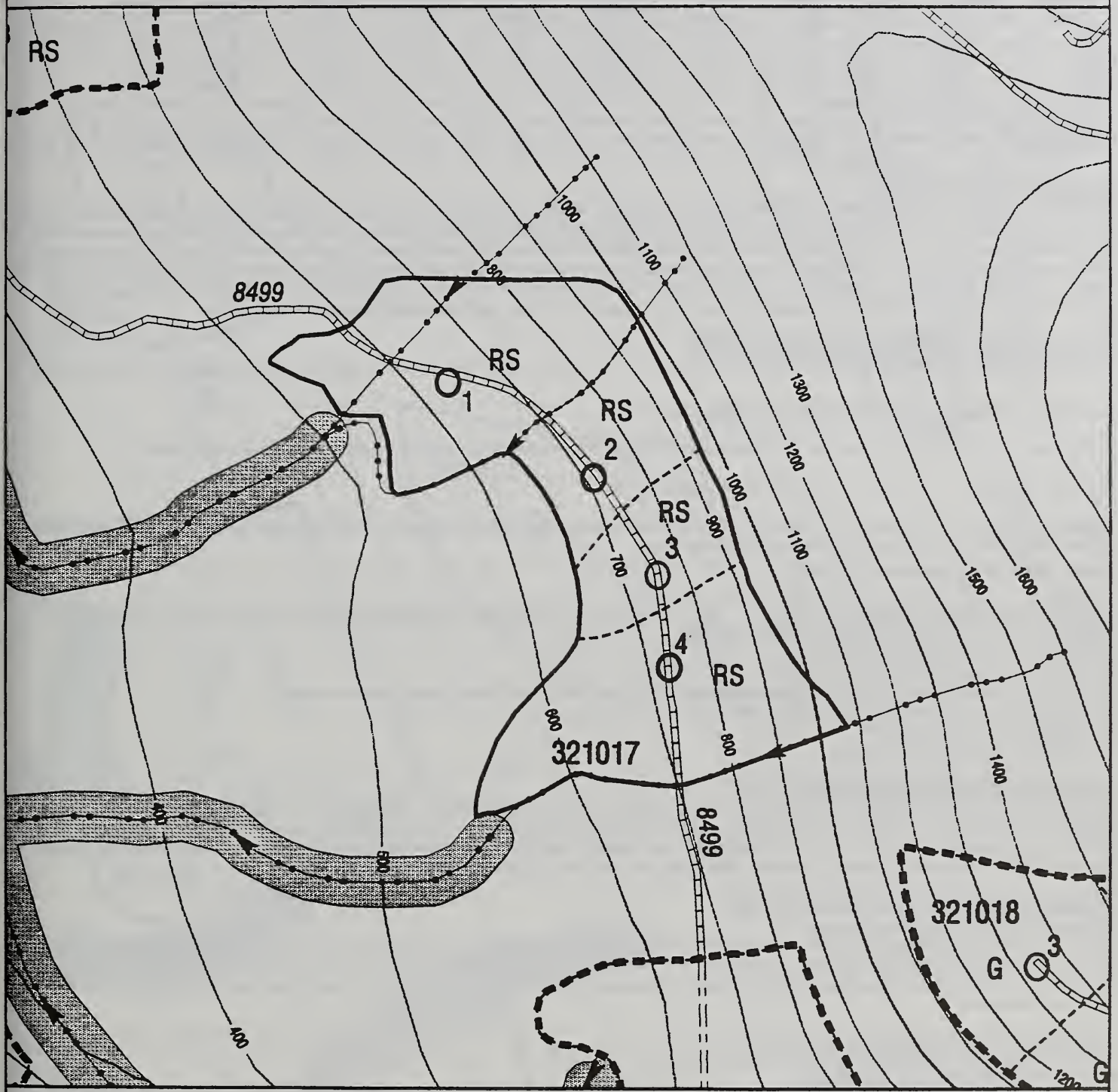
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321017 ALTERNATIVE(S): B C D

ACRES: 55.77 TOTAL NET MBF: 1613.9 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 115



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321018 MAP # 104 ACRES: 26

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 49 PHOTO #'S: 684-127

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	11.6	44%	HC-WH	210-220	45	M	M	L	M	M
VC-5	27.0	-	-	-	-	-	-	-	-	-	-
VC-6	39.5	14.6	56%	WH	110-120	55	H	M	L	H	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		26.2	100%	-	-	51	H	M	mistletoe	H	M

STAND CHARACTERISTICS

Upper elevation stand of medium to large sawtimber in the western hemlock and western hemlock-yellow cedar series. Defect and mortality are low to average. Stand structure is 2-storied in VC6 and functionally even-aged in VC 5 (borderline 4/5, called 4 on TIMTYP layer) . Overstory age is over 350 yrs in VC 6 and 180 to 220 in VC 4/5 with scattered predominants over 350 yrs. . The southwest aspect is gentle near the ridgeline rolling off to moderately to very steep with two Class 3 v-notch streams. Slope instability is evident in the stand. Soils are moderately well drained. Understory is relatively open, primarily blueberry with shield fern and devil's club in VC 6 and blueberry in VC 4/5. Advanced conifer reproduction is sparse in VC 4/5 but a 60 to 80 ft tall understory occupies over 60% of growing space in VC 6. Regeneration potential and potential productivity are high. Mistletoe is present but not abundant. Windthrow and slope instability are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Gravity Return, Skyline. (2) Heavy partial harvest feasible. (3) Tailtrees required. (4) Skyline extensions required beyondunit boundaries.

Visual Resource Management: (1) VQO: Modification; VAC Intermediate. (2)

Soils / Geology: (1) Middle slope is greater than 70% and instability is evident. BMPs are applied to protect slope stability. Unstable areas are avoided.

Fisheries / Watershed: (1) 2 Class 2 v-notches in stand with unstable channels.

Wildlife: (1) Suspected northern goshawk seen near unit. (2) red tailed hawk in unit. (3) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of a overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Exclude Hazard Class IV soils from the commercial timber base.
(6) Provide a programmed timber yield.
(7) Skyline extensions beyond unit boundary.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative because is best provides for retained habitat structure, visual mitigation, and regeneration of yellow cedar. Clearcut and clearcut with reserves would not provide as much habitat, visual quality, and ecological/soil function. Group selection was considered for the VC 6 to remove the overstory and leave the younger cohort; however, much of this stand condition was dropped for reasons of slope stability and the rx would require helicopter harvest. Defer treatment would not provide a timber yield and would not regenerate a stand with low current and moderate to high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The south boundary buffers a large and unstable Class 3 v-notch stream. The east boundary follows the transition to low productivity forest near the ridge. The north boundary is a logical setting boundary with a leave strip between 321018 and 321017. A north-south strip of unstable slope >75% was deleted from 321018 as originally planned and the lower portion renumbered as 321199 and treated as a separate unit. The west boundary of 321018 is now the break into the oversteepened and potentially unstable midslope area.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate water Quality Protection Needs- Class 3 streams
BMP 13.5 Protection of Potentially Unstable Areas.
BMP 18.1: Reserves maintain habitat structure and provide for snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Schedule PCT and favor SS and YC.

MONITORING PLAN

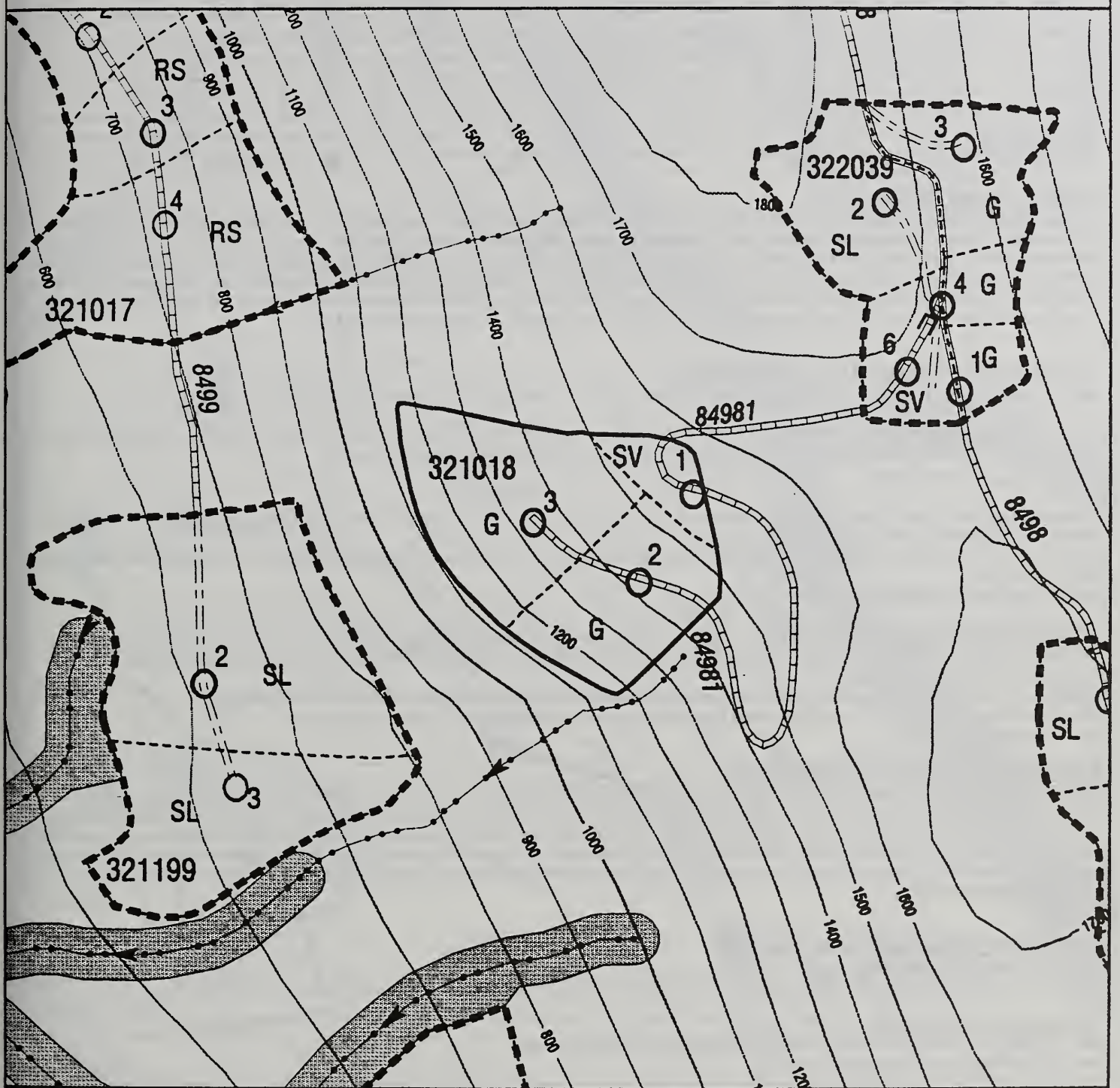
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321018 ALTERNATIVE(S): B C D

ACRES: 26.29 TOTAL NET MBF: 634.9 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 127



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321019 MAP #: 95 ACRES: 82

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 48 PHOTO #'S: 684-115

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	12.8	16%	HC	210 220	53	L	MP	M	M	L
VC-5	27.0	27.8	34%	H	110 130	55	M	M	-	H	M
VC-6	39.5	41.4	50%	H	110 130	60	M	G	-	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		82.0	100%	-	-	57	M	M	DECLINE	H	M

STAND CHARACTERISTICS

Even aged functional and unevenage stand in volume class 4, 5 & 6 in the w. hemlock and w. hemlock/y. cedar series. This stand also has significant amounts Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 50% on a NE aspect. The western portion of the unit is bounded by a class II V-notch buffer. Overstory ages are 265+/- years old with moderate defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage, old defoliation resulting in snag tops, and scattered windthrow. The understory is <20% stocked with 20 to 50 year old W. hemlock in which occur in groups, throughout with poor to fair vigor. Ground cover is moderate to dense vaccinium associated with rusty menziesia, skunk cabbage and minor amounts of devils club. Significant new windthrow found throughout the unit. Site is moderate to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Slackline cable system. Suitable for heavy partial cut. Skyline rigged through buffer. Snag retention is a safety hazard.

Visual Resource Management: VQO Partial retention. Viewed from middle ground of ferry route. Cumulative impacts with adjacent units reduce impacts by 1/3 to 1/2 by dropping units, reconfiguring retaining green culls, selective harvest or rounding corners and scalloping settings. Priority 1.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Class II stream to the east is buffered. Also buffered a short class II at south setting. Buffer generally brought up to the top of the V-notches for stability. Split yard away from small V-notch creeks.

Wildlife: Surveyed for marbled murrelets high density.. Recommend leaving live reserve trees and snags to maintain habitat structure. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4,5& 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings, shelterwood and rounding unit corners on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the west line for vertical stand structure and cavity nesting habitat.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve individual trees (green cull) uniformly; scallop edges between settings on the upper slope that may be visible from Port Houghton. Retain trees around class III on lower slope between settings. Systems provides good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls, y. cedar or less common Sitka spruce when found. Also during final layout round edges of unit for visual mitigation. Clearcut and clearcut with reserves would not mitigate wildlife and visual concerns. Group selection would be operationally infeasible in this terrain. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East boundary is a class II stream buffer. West boundary is the 849502 road. North and south boundaries the extent of logical logging systems.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Split yard away from V-notches. Directional fall away from V-notches and buffers.
BMP 18.1: Shelterwood mitigates wildlife concerns.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notch area with Sitka alder.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321019 ALTERNATIVE(S): C

ACRES: 82.02 TOTAL NET MBF: 2230.4 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 115



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321020 MAP # 176 ACRES: 62

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 47 PHOTO #'S: 684-107

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	-	0%	-	-	-	-	-	-	-	-
VC-5	27.0	61.9	100%	H-HC	110-210	50	M	M	L	H	H
VC-6	39.5	-	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		61.9	100%	-	-	50	M	M	Mistletoe	H	H

STAND CHARACTERISTICS

Two-storied to uneven/multiple storied stand in the W. hemlock W. hemlock/Y. cedar series. This stand also has Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to120% on an E aspect which are bisected by 2 medium V-notch creeks. The eastern portion of the unit is bounded by a major class II V-notch buffer and the west by a major ridgetop . Overstory ages are 250 to 350 years old with high defect and significant amounts of conk, minor amounts of mistletoe, mechanical/animal damage, windthrow and wind damage. The understory is 20-40% stocked with 20 to 70 year 0ld w. hemlock and Sitka spruce which occur in groups throughout with poor vigor. Ground cover is moderate to dense vaccinium associated with rusty menziesia and skunk cabbage. Significant new windthrow found throughout. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: West setting Running skyline. South setting Gravity return. North setting Slackline. Split yarding away from class III creeks is not considered feasible, but partial suspension is feasible. Not suitable for partial cut. Rig skyline through buffer.Snag retention is a hazard.

Visual Resource Management: VQO Partial retention. Viewed from middle ground of ferry route. Cumulative impacts of adjacent units result in modification. Reduce impacts by 1/3 by dropping units, retention, partial cutting, unit reconfiguration, and/or rounding edges on unit.

Soils / Geology: Portion of the unit is mapped as hazard class III soil.

Fisheries / Watershed: Buffer flagged on main creek. Large fish barriers found north of unit. Intensive surveys done on creek. Recommend split yarding away from class III creek that runs through the unit. This is done.

Wildlife: Habitat for sap sucker, martin and black bear. Use reserve trees and snags to maintain habitat structure. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings and rounding unit corners on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the west line for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves and Clearcut were selected because: (1) They provide a high volume return from a stand that is past its peak productivity.(2) They reserve trees (green cull) on upper slopes along the west line above and below the 8495 road when feasible and further mitigate visual effects by scalloping edges between settings on the upper slope that may be visible from Port Houghton. (3) They provide good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts through retention of green culls, yellow cedar, or Sitka spruce. Tall timber to the north of the unit will partially hide the unit from view. Trees are 100-115 feet in total height. Shelterwood and group selection are impractical to use due to terrain and logging system limitations, and not desirable with dwarf mistletoe infection and trees of poor crown structure. Deferring treatment would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East boundary (unit bottom) is bounded by a class II creek and buffer. The western boundary is defined by a major ridgetop and proposed road system. The north and south boundaries are defined by the extent of logical yarding systems and leave settings between adjacent units.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Avoid yarding across V-notches- when unavoidable suspend or partially suspend logs. Seed V-notch areas with Sitka alder after harvest.
BMP 12.17: Sitka alder for V-notch stabilization.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notch area with Sitka alder.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

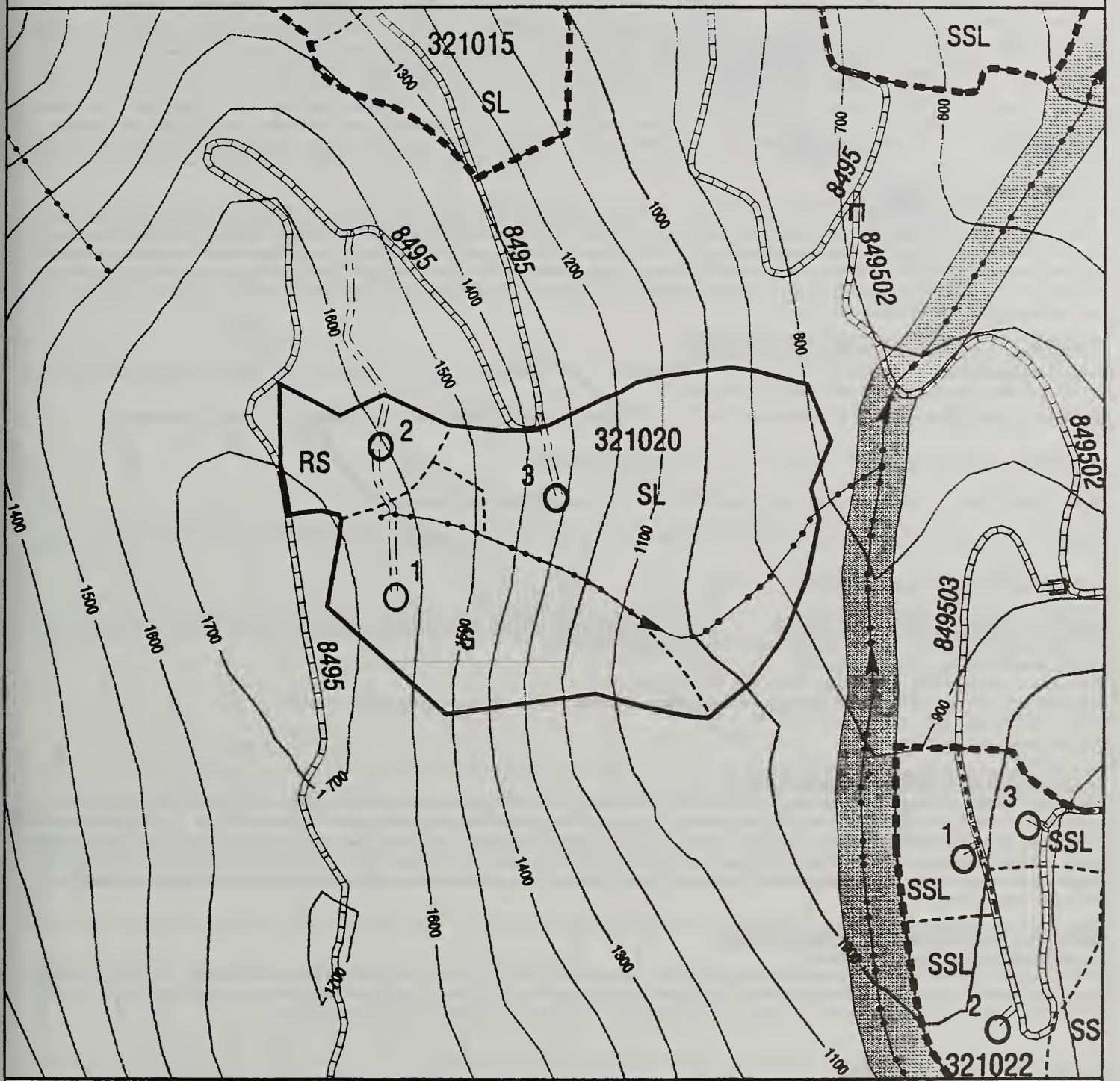
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321020 ALTERNATIVE(S): C

ACRES: 61.77 TOTAL NET MBF: 1477.1 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 47 ROLL NO.: 684 PRINT NO.: 107



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.21:40:54.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321021 MAP # 100 ACRES: 38

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 47 PHOTO #'S: 684-108

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	22.4	59%	XC	420-440	40	L	P	L	L	M
VC-5	27.0	1.1	3%	-	-	-	-	-	-	-	-
VC-6	39.5	14.3	38%	WH	110-140	55	M	M	L	M	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		37.8	100%	-	-	45	M	MP	mistletoe	M	M

STAND CHARACTERISTICS

High elevation stand of mixed conifer and western hemlock series . VC 4 is small sawtimber with low defect and mortality. VC 6 is large sawtimber with average defect and mortality. Stand structure is uneven in VC 4 and a mosaic of uneven and 2-storied in VC 6. Overstory age is greater than 300 years. Slopes on the northeast aspect are moderate to very steep. VC 4 soils are poorly drained soils and VC 6 soil drainage is moderately poor. Several Class 3 drainages are present. Understory is blueberry, with abundant skunk cabbage in VC4 and devils club in VC6. Advanced conifer reproduction is abundant but generally poor in vigor. Regeneration potential is low in VC 4 and moderate in VC 6. Potential site productivity is low to moderate. Mistletoe infection is present. Windthrow is a minor management concern. Regeneration potential in VC 4 and visual impact are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Slackline with 1 1/4" skyline. (2) Complex guy anchors, deadmen, or mobile guy anchor required. (3) Heavy partial harvest feasible but snag retention is a safety hazard. Temporary road construction required.

Visual Resource Management: (1) VQO: Partial retention; VAC: Low. (2) Viewed in middle ground from small boats or ferry; rated as highest visual sensitivity.

Soils / Geology: (1) Hazard Class III soil in portion of unit. (2) Exclude low productivity soils.

Fisheries / Watershed: (1) Several very small Class 3 streams with good bank stability; low watershed concern.

Wildlife: (1) Recommend green tree and snag retention for vertical habitat structure and other wildlife habitat values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of middleground visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Reduce regeneration failure risk.
(6) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system and not reasonable due to infestation of dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The southwest top southeast boundary follows the muskeg /low productivity forest fringe. The northwest boundary follows a logging setting break . The setting northwest of the unit was dropped and a setting added to the southeast. the dropped area was relatively thrifty timber on the slope in a mosaic with low productivity forest. The added setting is large overmature sawtimber in VC 6. The northeast boundary follows the transition into muskeg and low productivity forest.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Reserve trees will provide habitat structure and snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and blowdown of leave trees.
(2) Enhance volume and value yield by SS planting and featuring YC regen.
(3) Schedule PCT, favor SS and YC.

MONITORING PLAN

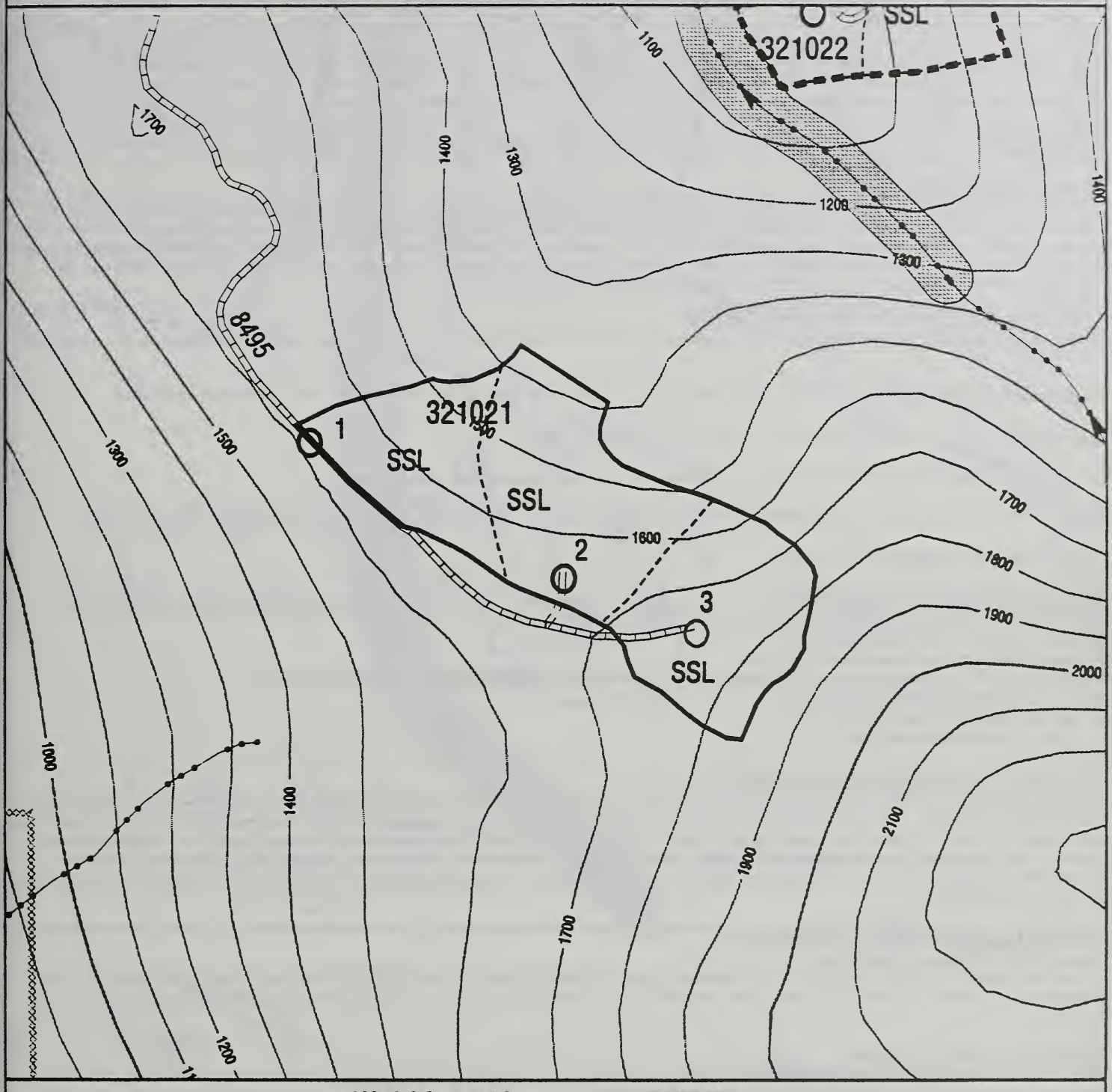
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321021 ALTERNATIVE(S): C

ACRES: 37.7 TOTAL NET MBF: 774.8 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 47 ROLL NO.: 684 PRINT NO.: 108



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321022 MAP #: 109 ACRES: 36

AERIAL PHOTO YEAR: 1989 FLIGHT LINE: 24 PHOTO #'S: 888-194

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	-	-	-	-	-	-	-	-	-	-
VC-5	27.0	35.9	99%	WH-HC	110-210	50	L	MP	-	H	M
VC-6	39.5	0.4	1%	HC-XC	110-420	55	L	MP	-	H	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		36.3	100%	-	-	50	L	MP	-	H	M

STAND CHARACTERISTICS

Upper elevation stand of medium sawtimber in the western hemlock and western hemlock-yellow cedar series. Average to high defect and mortality as about 70% of overstory trees are defective. . Stand structure is a mosaic of 2-storied and uneven. Overstory age is over 300 years and understory is over 100 years. The predominantly west aspect stand has moderately steep to steep slopes and several Class 3 drainages. Soils drainage is moderately poor. Understory is blueberry with scattered skunk cabbage. Advanced conifer regeneration averages 25% understory cover and is mostly western hemlock in fair to good condition. Regeneration potential is high and potential productivity is moderate. Management concerns are adjacency with other units and visual impact.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Small slackline. (2) Tail trees and guyline extensions or multiple tiebacks required. (3) Heavy partial harvest feasible but snag retention is a safety hazard.

Visual Resource Management: (1) VQO: Partial Retention; VAC: Low. (2) Middle ground view from ferry and small boat route. (3) Highest visual sensitivity.

Soils / Geology: (1) Unit now excludes Hazard Class 4 soils after it was reviewed in field.

Fisheries / Watershed: (1) Min 100 ft TTRA buffer required on Class 2 stream (with no fish present but adequate habitat)

Wildlife: (1) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of middleground visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Reduce sediment yield to fish bearing streams.
(6) Maintain diversity of commercial timber species.
(7) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system and not reasonable due to infestation of dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit was reconfigured from the original proposal due to road access feasibility and adjacency problems with unit 321023. Two thirds of the unit was dropped and three small settings were added to the northwest, The north and northeast boundary follows a logical setting boundary on a ridgetop leaving a future unit between 321022 and 321019.

Soil, Water and Wildlife Conservation:

BMP 13.3 designate water Quality Protection Needs.
BMP 18.1: Reserve trees maintain habitat structure and provide snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging and blowdown of leave trees.
(2) Schedule PVT and favor SS and YC.

MONITORING PLAN

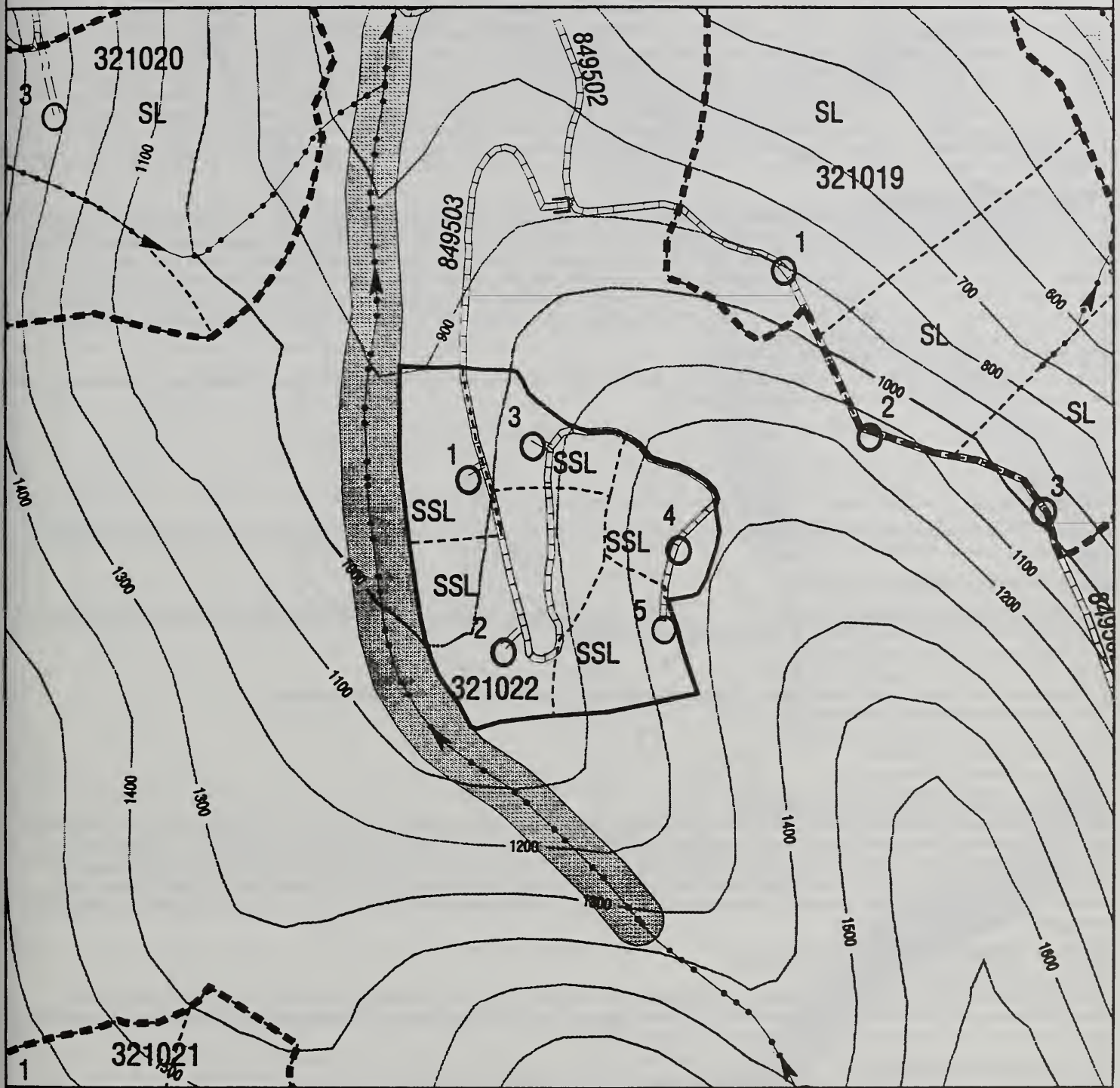
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321022 ALTERNATIVE(S): C

ACRES: 36.21 TOTAL NET MBF: 869.8 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 24 ROLL NO.: 888 PRINT NO.: 194



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321023 MAP #: 115 ACRES: 66

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 48 PHOTO #'S: 684-114 ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	1.2	2%	XC	420	45	L	P	-	L	M
VC-5	27.0	24.3	37%	HC	220-210	50	M	MP	-	M	M
VC-6	39.5	40.2	61%	WH	110-140	55	M	M	-	H	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		65.7	100%	-	-	53	M	M	-	H	M

STAND CHARACTERISTICS

Mid to upper elevation stand of large sawtimber that is 60% VC 6 western hemlock series with a dominant spruce component; 40% VC 5 western hemlock-yellow cedar series with scattered spruce; and a VC 4 mixed conifer series fringe bordering the muskeg at the bottom of the stand. Defect and mortality is low to moderate in VC 5 and average to high in VC6. Stand structure is functionally even-aged with overstory age over 350 years. The northeast aspect is moderately steep to steep with two Class 3 drainages. Soils are moderately poor to moderately well drained. Understory averages 40% blueberry cover, with devils club in draws in VC6 and skunk cabbage common in VC 6. Advanced conifer reproduction is sparse, with some groups of fair to poor WH reproduction in canopy gaps created by windthrow. Regeneration potential is high except for moderate in VC 5 where skunk cabbage is abundant. Potential productivity is moderate to high. Cedar decline is evident in the muskeg fringe along the bottom of the stand. Visuals impact is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 ft slackline with 1 3/8 inch skyline. (2) Tail trees and skyline extension into stream buffer required. (3) Heavy partial harvest feasible below road but snag retention is a safety hazard. (4) Side blocking required.

Visual Resource Management: (1) VQO: Partial retention; VAC: Low. (2) Viewed in middleground from small boat and ferry route.

Soils / Geology: (1) Low productivity soils were excluded from timber harvest.

Fisheries / Watershed: (1) A Class 2 stream complex borders the northeast unit that requires a min 100 ft TTRA buffer.

Wildlife: (1) Survey for marbled murrelet indicated a high density. (2) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of middle ground visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Maintain diversity of commercial timber species.
(7) Provide a programmed timber yield.
(8) Skyline yarding with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system and not reasonable due to infestation of dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

From the northeast corner the east boundary is a Class 2 buffer (upgraded during field review) and a low productivity forest buffer to the muskeg and stream where it downgrades to Class 3. The south boundary buffers a Class 3 v-notch and adjacent low productivity forest land. The southwest and north boundaries are feasible logging setting boundaries. There is a future unit to the north between 321023 and 321019.

Soil, Water and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs- Class 2 TTRA buffer and Class 3 in unit.
BMP 13.9 Suspended Log Yarding
BMP 13.16 Stream Channel Protection- Clear slash from Class 3 's in unit.
BMP 18.1: Snag retention and recruitment from reserve trees.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Schedule PCT and favor SS and YC.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321023 ALTERNATIVE(S): B C

ACRES: 65.62 TOTAL NET MBF: 1967.7 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 114



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321024 MAP #: 128 ACRES: 87

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 48 PHOTO #'S: 684-113

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	10.0	11%	XC	430-420	40	L	P	L	L	M
VC-5	27.0	76.9	88%	S-HC	340-320	50	M	M	L	M	H
VC-6	39.5	0.4	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		87.3	100%	-	-	49	M	MP	mistletoe	M	H

STAND CHARACTERISTICS

Mid to upper elevation stand, 90% spruce and W. hemlock-yellow cedar series in VC5 and 10% mixed conifer series in VC4, with a very small inclusion of VC6. VC4 has low-site inclusions. Sawtimber is medium in size with low defect and mortality. Stand structure is a mosaic of uneven-aged and 2-storied with overstory age 300+ years in VC5 and 250+ years in VC4. Some mature conifer understory is of suitable quality for crop tree retention. Slopes are moderately steep to very steep with several small to moderate class 3 drainages and v-notches. Soil drainage in VC5 is moderately poor to moderate, and poor throughout VC4. Approximately 12-14 acres have been identified within the unit as "special treatment" slope hazard areas- steep slopes with evidence of instability ; these slopes are operable with silvicultural limitations. Understory cover is fairly dense in VC5, blueberry and devils club, and open in VC4 with blueberry, skunk cabbage, and deer cabbage indicating areas of low productivity. Conifer understory averages 20% pole cover and 40% advanced reproduction. Regeneration potential is low to moderate and potential productivity is fair to moderate. Mistletoe is present but not abundant . Slope stability and visual impact are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Slackline proposed. (2) Heavy partial harvest feasible but snag retention is a safety hazard. (3) Complex guyline anchors or rock bolts required. (4) tail trees and skyline extensions in stream buffers required.

Visual Resource Management: (1) VQO: Modification; VAC: High. (2) Viewed in background from small boat and ferry route.

Soils / Geology: (1) Area of potential soil instability in northeast of stand. This area was avoided.

Fisheries / Watershed: (1) Class 2 stream to northeast requires a min 100 ft TTRA buffer, which was done.

Wildlife: (1) Recommend green tree and snag retention for vertical habitat structure and other wildlife habitat values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and mature understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Reduce sediment yield to fish bearing streams.
(6) Maintain diversity of commercial timber species.
(7) Provide a programmed timber yield.
(8) Skyline yarding with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system and not reasonable due to infestation of dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The east boundary excludes low-site and muskeg areas and buffers the Class 2 by 400 ft. The south and north boundaries follow the transition into low-site and muskeg areas. The boundary in the northwest corner and the west boundary are logical logging setting boundaries adjacent to future units.

Soil, Water and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - Class 2 buffer, Class 3's in unit.
BMP 13.5 Protection of Potentially Unstable Areas - special treatment area where mature understory retained.
BMP 13.9 Suspended Log Yarding - Over Class 3's in unit and in Special treatment area
BMP 13.16 Stream Channel Protection - clear slash from Class 3's in unit.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and blowdown of retention trees.
(2) Timber value and volume productivity enhanced by planting SS and YC.
(3) schedule PCT and favor SS and YC.

MONITORING PLAN

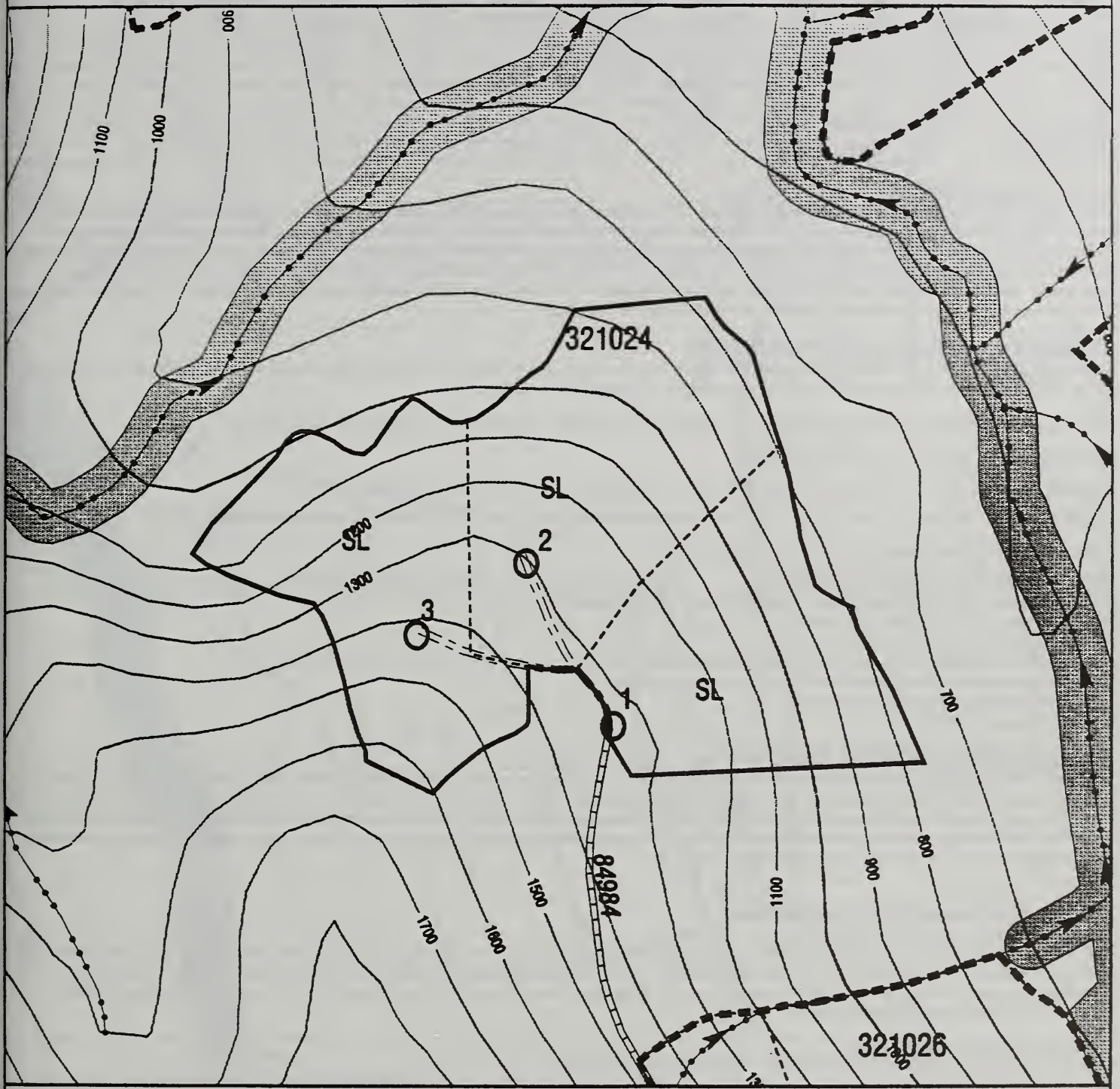
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321024 ALTERNATIVE(S): B C D E

ACRES: 87.35 TOTAL NET MBF: 1971.3 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 113



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.22:25:17.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321025 MAP # 121 ACRES: 93

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 49 PHOTO #'S: 684-128

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	7.6	8%	WH	110-130	50	M	MP	-	M	M
VC-5	27.0	3.6	4%	WH-HC	110-210	55	M	MP	-	H	H
VC-6	39.5	81.5	88%	WH	140-110	60	M	M	-	H	H
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	0.1	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		92.8	100%	-	-	59	M	M	-	H	H

STAND CHARACTERISTICS

Mid to upper elevation stand, 88% W. hemlock series in VC6 and 12% W. hemlock and W. hemlock-yellow cedar series in VC 4 & 5. Sawtimber in VC6 is large with high-average defect and low mortality, medium sized in VC 4&5 with low-average defect and higher mortality. Stand structure is a mosaic of uneven-aged and 2-storied, with overstory age 200+ years. West-facing slopes are moderately steep to very steep with several small class 3 drainages and one v-notch stream; soils range from moderately well to poorly drained by plant association. The downslope west extension of the unit was made into a helicopter selection setting to mitigate mass wasting hazard on very steep slopes. Understory is blueberry with some devils club and rusty menziesia, and skunk cabbage in VC4. Advanced conifer reproduction is all WH, occurring in occasional patches with up to 40% cover. Regeneration potential and potential productivity are high.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Combination of slackline and running skyline with some shovel logging. (2) Partial harvest is feasible but snags safety hazard.. (3) Lower setting is large slackline or helicopter. (4) Suitable for heavy partial cut. (5) Tailhold required outside of unit.

Visual Resource Management: (1) VQO: Modification; VAC: Intermediate. (2) Background view from ferry route. (3) Low visual sensitivity.

Soils / Geology: (1) Lower slopes are Soil hazard Class III .

Fisheries / Watershed: (1) Provide at least a 100 ft TTRA buffer on Class 2 at bottom western portion of unit. This was done.

Wildlife: (1) Recommend green tree retention for vertical habitat structure and other wildlife values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Modify management on Hazard Class III soils to reduce mass movement risk
(6) Minimize sediment yield to fish bearing streams.
(7) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the recommended Rx for the cable portions of the stand because a heavy partial harvest is feasible, wildlife habitat structure could be retained, and visual impact reduced with a marginal loss in timber yield and harvest economics. Clearcut and clearcut with reserves would not retain habitat structure nor lessen visual impact to the same degree. Group selection is the recommended Rx for the helicopter setting to reduce mass movement risk by retention of tree cover and avoiding areas of greatest risk. Individual tree selection or sanitation salvage would not provide as favorable conditions for regeneration and would be more difficult operationally. Defer would not regenerate a overmature stand with high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The north and east unit boundaries were located bordering hazard class 4 soils on slopes and low-site volume stands along the ridge, which passes through the eastern arm of the unit. The western downhill extent of the unit was moved upslope to avoid v-notch stream courses in proximity of the buffered class 2 stream. The south boundary is a predesignated logging setting boundary that borders a stand of younger, thrifty timber, while the south boundary of the western unit arm as the proposed cable setting boundary prior to designation as a helicopter setting.

Soil, Water and Wildlife Conservation:

BMP 13.3: Designate Water Quality Protection Needs _ Class 3 and Class 2 streams.
BMP 13.5: Protection of Potentially Unstable Areas - Deleted unstable Class 3 v-notches on lower slope and changed Rx to partial harvest and helicopter.
BMP 18.1: Group selection and reserves maintain habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and blowdown of leave trees.
(2) Schedule PCT and favor YC and SS.
(3) Plant SS.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321025 ALTERNATIVE(S): B C D E SETTING HE EXCLUDED IN ALT(S). C E

MAXIMUM ACRES: 92.76 TOTAL NET MBF: 2959.3 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 128



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 82 | UNIT #: 321026 | MAP #: 141 | ACRES: 68

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 49 | PHOTO #'S: 684-129 | ALTERNATIVE(S): B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	8.0	12%	MH-HC	510-210	45	L	MP	-	M	M
VC-5	27.0	13.9	20%	MH-HC	510-210	55	L	M	-	M	M
VC-6	39.5	46.0	68%	MH-HC	510-210	60	M	G	-	M	H
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		67.9	100%	-	-	57	M	G	-	M	H

STAND CHARACTERISTICS

Mid to upper elevation stand of Mt.. hemlock and W. hemlock-yellow cedar series in volume classes 4, 5, and 6, differentiated primarily by productivity associated with soil drainage classes. Sawtimber is medium to large, with defect and mortality ranging from very low to average by volume class. Stand structure is a mosaic of uneven-aged and 2-storied with overstory age exceeding 350-400 years. Northeast-facing slopes are moderately steep to very steep and benchy midslopes, with 6+ class 3 drainages, including two incised v-notches. Soils are mostly moderately well drained (in VC6, majority of unit area), grading to somewhat poorly drained in VC4. Understory throughout the unit is a mosaic of open areas, some dense blueberry, some dense regeneration, mostly low brush cover with well stocked healthy regeneration. Advanced mixed species regeneration, healthy and relatively vigorous, is present in approx. 70% of unit area; regeneration potential is moderate. Slope stability in the middle 1/3 of unit may be a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Skyline yarding. (2) Tail trees required. (3) Heavy partial harvest feasible but snag retention is a safety hazard. (4) Rig through stream buffer. (5) Require 9 station temporary road, including 6 stations of 16% adverse grade - should be built after NW setting is logged.

Visual Resource Management: (1) VQO: Modification, VAC: Intermediate. (2) Background view from ferry route. (3) Low visual sensitivity.

Soils / Geology: (1) Areas of potentially unstable soil at midslope.

Fisheries / Watershed: (1) Min 100 ft TTRA buffer required on Class 2 at bottom of the stand. (2) Class 3 v-notch on north stand boundary.

Wildlife: (1) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities)

(1) Regeneration of an overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Conserve advanced regeneration where feasible.
(6) Minimize sediment yield to fish bearing streams.
(7) Provide a programmed timber yield.
(8) Skyline yarding with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative because a heavy partial cut is feasible and there is heavy defect in the overstory and an understory that is relatively abundant and in fair to good condition. Clearcut and clearcut with reserves would provide a slightly higher yield at lower cost but would cause more damage to the understory and provide less habitat structure retention and visual mitigation. A compromise is that hemlock regeneration will predominate as the degree of disturbance will not be as favorable for YC and SS. The Rx will be more successful if the unit is yarded by helicopter. Group selection is not feasible without helicopter harvest and would not provide as high a yield nor subsequent productivity. Sanitation salvage is not an economic alternative. Defer would not regenerate a unit with moderate productivity and would not release acceptable understory trees or advanced regeneration.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The east boundary at the lower extent of the unit follows a Class 2 stream buffer. The north boundary buffers a large, high-gradient class 3 v-notch stream which becomes a Class 2 tributary on the lower slope. The main access road serves as the western unit boundary. The south unit boundary is a feasible logging setting boundary, also located to retain a timbered buffer between units 321026 and 321028.

Soil, Water and Wildlife Conservation:

BMP 13.3: Designate Water Quality Protection Needs- Class 2 TTRA buffer, buffer Class 3 v-notch
BMP 13.9: Suspended Log Yarding
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

Soil mixing from logging disturbance and blowdown of reserve trees.
Schedule PCT and favor YC and SS.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321026 ALTERNATIVE(S): B C D E

ACRES: 67.86 TOTAL NET MBF: 1997.1 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 129



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 82 | UNIT #: 321027 | MAP #: 140 | ACRES: 74

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 49 | PHOTO #'S: 684-129 | ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	13.0	18%	WH	130-110	45	M	MP	-	M	M
VC-5	27.0	12.3	17%	WH	110-130	50	H	M	-	M	M
VC-6	39.5	48.5	66%	S-WH	310-140	55	H	M	-	H	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		73.8	100%	-	-	52	H	M	-	H	M

STAND CHARACTERISTICS

Mid to upper elevation stand of medium to large sawtimber in a mosaic of western hemlock, Sitka spruce, mixed conifer, and western hemlock-yellow cedar series. Defect and mortality is average. Much of the defect is from frost cracking in large trees and dead tops. Stand structure is functionally even aged with scattered snags 8-12 per acre. Overstory age is 260-320 years. The southwest aspect averages 40-50% on middle and upper slopes, and is gentler on the more productive lower slopes. Class 3 drainages are present including a moderate size v-notch in the lower central portion of the unit. Soil drainage is moderate to moderately poor. Understory is blueberry with a complement of skunk cabbage, devils club, and shield fern. Advanced conifer reproduction is sparse. Regeneration potential is moderate to high. Windthrow is a management concern, especially on mid and upper slopes.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Gravity return. (2) Heavy partial harvest feasible but snag retention is a safety hazard. (3) 200 ft temp road required to access landing. (4) Tail trees and skyline extensions across the Class 2 stream are required.

Visual Resource Management: (1) VQO: Modification, VAC: High. (2) Viewed in background from oblique angle. Visual impact is low sensitivity.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) TTRA Class 2 buffer required. (2) Class 3 v-notch in lower unit.

Wildlife: (1) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of commercial timber species.
(6) Minimize sediment yield to fish bearing streams
(7) Provide a programmed timber yield.
(8) Skyline yarding with partial suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves, the selected alternative, best meets overall resource objectives for several reasons: (1) Ecological function: Blowdown will perpetuate pit and mound topography and potentially maintain or improve site productivity in portions of the stand. (2) Harvest efficiency: Almost all of the available volume will be logged. (3) Visual quality: Reserve trees will mitigate the effects of harvest as seen from Port Houghton. (4) Wildlife habitat: Vertical structure will provide habitat for several species and species groups. Other alternatives: Clearcut would not meet visual quality and wildlife objectives. Shelterwood with reserves would not harvest as much timber, and would be marginally better in mitigating visual quality and providing habitat. Group selection was considered but not selected because it would require costly helicopter harvest and the likelihood of subsequent blowdown reduces the probability of net increment. Defer treatment would not regenerate this stand, which is decadent timber with moderate to high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The east boundary borders a low-site fringe and muskeg along the upper ridge. Part of the northeast setting as originally planned was deleted to logically conform to a topographic feature found in the field, and the southeast setting was enlarged. The north- and south-western unit boundaries are logical logging setting boundaries abutting future entries. Unit 321029 was modified to maintain a wide wildlife corridor between the two units. The west boundary is a TTRA Class 2 stream buffer.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - TTRA Class 2 buffer, Class 3 with full suspension in lower unit.
BMP 13.9 Suspended Log Yarding.
BMP 13.16 Stream Channel Protection- remove slash from Class 3.
BMP 18.1: Reserve trees provide snag recruitment for wildlife.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and blowdown of retention trees.
(2) Plant SS and YC to improved volume and value growth .
(3) Schedule PCT and favor SS and YC.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321027 ALTERNATIVE(S): B C D E

ACRES: 73.63 TOTAL NET MBF: 2099.4 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 129



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321028 MAP # 147 ACRES: 59

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 49 PHOTO #'S: 684-130

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	38.4	64%	XC	420-410	45	L	P	-	L	L
VC-5	27.0	8.6	14%	WH-HC	110-220	50	L	MP	-	M	M
VC-6	39.5	12.7	21%	WH-HC	110-220	55	L	MP	-	M	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		59.7	100%	-	-	48	L	P	-	L	L

STAND CHARACTERISTICS

Mid to upper elevation stand, 65% mixed conifer series in VC4 and 35% w. hemlock and w. hemlock-yellow cedar series in VC 5 & 6. Sawtimber in VC4 is medium size with high defect and very low mortality, also medium in VC 5&6 with low-average defect and mortality. Stand structure is functionally even-aged with overstory age 200+ years. Slopes are moderately steep with a few small v-notch creeks and one large v-notch stream in the central draw bordered by unstable sideslopes. Soils are poorly drained in VC4, moderately poorly drained in VC 5&6. Understory is blueberry with skunk cabbage abundant in VC4 and skunk cabbage + devils club in VC 5&6. Advanced conifer regeneration occupies 15-40% understory cover in VC4 with good form MH and WH, and 10-15% cover of variable quality WH in VC 5&6; regeneration potential is low in VC4 and moderate in VC 5&6. Regen potential in VC4 and the large v-notch stream are management concerns in this unit.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Large slackline. (2) Partial harvest not feasible.

Visual Resource Management: (1) VQO: Modification, VAC: Intermediate. (2) Low visual sensitivity as most of unit is not seen.

Soils / Geology: (1) Low productivity forest soils.

Fisheries / Watershed: (1) Class 2 TTRA buffer required. (2) Stand split by large Class 3 v-notch which is now a setting boundary.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Maintain diversity of commercial timber species.
(6) Design alternative silviculture rx's to provide side by side demonstrations of adaptive management trials.
(7) Exclude low productivity forest soils from the commercial timber base.
(7) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because partial harvest feasibility is poor. Harvest economics , regeneration, and timber yield are maximized by the clearcut. Group selection and sanitation salvage were considered but costs would be high as helicopter harvest of defective and lower quality timber would be necessary. The poor condition of the understory and advanced reproduction indicate against partial harvest. Defer treatment would not regenerate an overmature stand with fair potential productivity nor provide a timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The south-central portion unit boundary follows the transition to large low-site volume forest and excludes an area included in the original unit proposal. . The northwest boundary buffers a Class 3 v-notch stream and leaves a future entry between 321028 and 321026. The northeast boundary is a TTRA Class 2 stream buffer. All other boundaries are the transition into low site/volume forest and muskeg fringe.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - TTRA Class 2 buffer and no cut buffer on Class 3 dividing unit.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance.
(2) Plant YC and SS to improve value and volume yield.
(3) Schedule PCT and favor SS and YC.

MONITORING PLAN

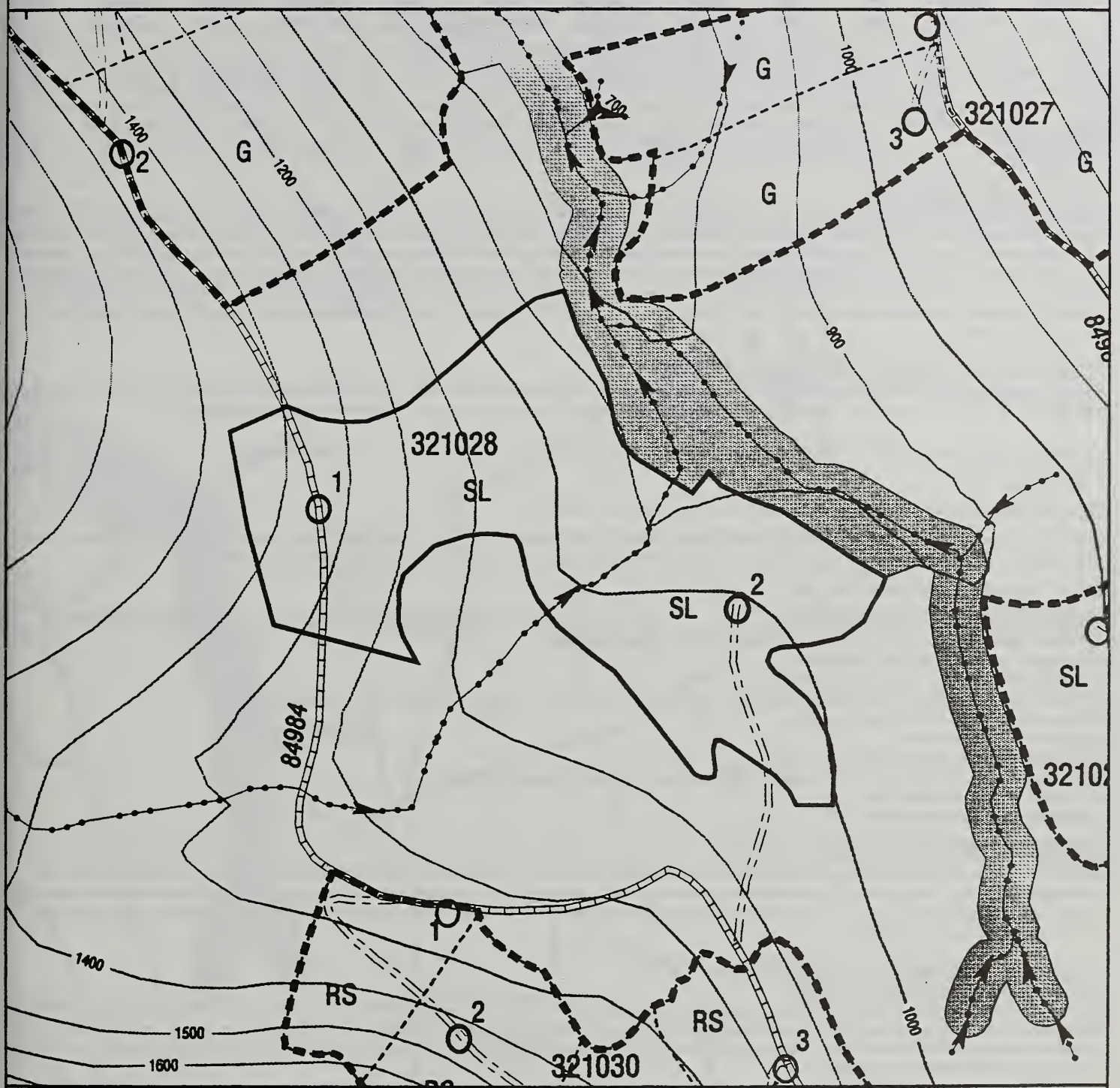
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321028 ALTERNATIVE(S): B C D E

ACRES: 60.49 TOTAL NET MBF: 1091.6 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 130



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.22:52:58.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321029 MAP # 148 ACRES: 75

AERIAL PHOTO YEAR: 1989 FLIGHT LINE: 25 PHOTO #'S: 888-178

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	10.0	13%	HC	220	45	M	P	-	M	M
VC-5	27.0	19.1	26%	HC	210-220	50	M	MP	-	M	M
VC-6	39.5	45.4	61%	WH-HC	120-220	60	H	M	-	H	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		74.5	100%	-	-	55	H	MP	-	H	M

STAND CHARACTERISTICS

Upper elevation stand of medium to large sawtimber. Upper slope is VC 6 with western hemlock series with significant spruce component and western hemlock-yellow cedar series in VC6 and VC 4 and VC 5 western hemlock-yellow-cedar series on the gentler lower slopes. Defect is average to high and current mortality is low. Stand structure is functionally even-aged with overstory age 300-350 years. Aspect is southwest. Upper slopes are 60-70% gradient, midslopes 30-50%, and lower slopes 10-35%. Soils are moderately well drained, somewhat poorly drained, and somewhat poorly to poorly drained respectively based upon position on slope. Three minor but high-gradient Class 3 streams and one v-notch stream occur within the unit. Understory is open on upper slopes; lower slopes have blueberry with abundant skunk cabbage. Advanced conifer regeneration is sparse. Regeneration potential is high to moderate. Potential productivity is moderate to high. Windthrow and sediment yield from Class 3 streams are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 ft large slackline, 70 ft small slackline and running skyline settings in stand. (2) Partial harvest is of poor feasibility. (3) 560 ft of temporary road required. (4) Multiple stump anchors, tail trees, and skyline extension through a Class 2 buffer required. (5) Directional cutting along buffer.

Visual Resource Management: (1) VQO: Modification, VAC: Intermediate. (2) Unit oblique to view from ferry route, no visual concerns.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) TTRA Class 2 buffer. (2) Several minor very small Class 3 in unit.

Wildlife: (1) No response to N goshawk survey. (2) Marbled murrelet survey results low density. (3) Heavily used travel corridor in saddle west of stand. (4) Recommend green tree and snag retention for vertical habitat structure and other wildlife values. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Maintain wildlife travel corridor.
(7) Maintain commercial species diversity.
(8) Design alternative silviculture rx to provide operational demonstrations of adaptive management trials.
(9) Provide a programmed timber yield.
(10) Skyline with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut and clearcut with reserves is the selected alternative because logging feasibility is poor for a partial harvest and clearcut maximizes yield, harvest economic, and subsequent regeneration and productivity. Group selection was considered but would require costly helicopter harvest. Blowdown risk would be significant and regeneration success poorer by group selection and the probability of net increment questionable. Defer treatment would not regenerate an overmature stand with moderate to high potential productivity nor provide a timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The north and south settings are logical setting boundaries leaving wildlife travel corridors/future units between 321029 and units 321027 and 26102. The setting breaks were established to buffer Class 3 streams. 321029 was redesigned from the original proposal by dropping setting s to the north and south on the lower slope and extending the unit upslope to include an additional two settings. The west boundary is a TTRA Class 2 stream buffer. The east boundary is above the upper road and follows the transition to low site/volume forest along the upper ridge.

Soil, Water and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - TTRA Class 2 buffer.
BMP 13.9 Suspended Log Yarding - one end suspension to reduce sediment yield from Class 3 streams in unit.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and blowdown of reserve trees.
(2) Planting YC and SS.
(3) Schedule PCT and favor SS and YC.

MONITORING PLAN

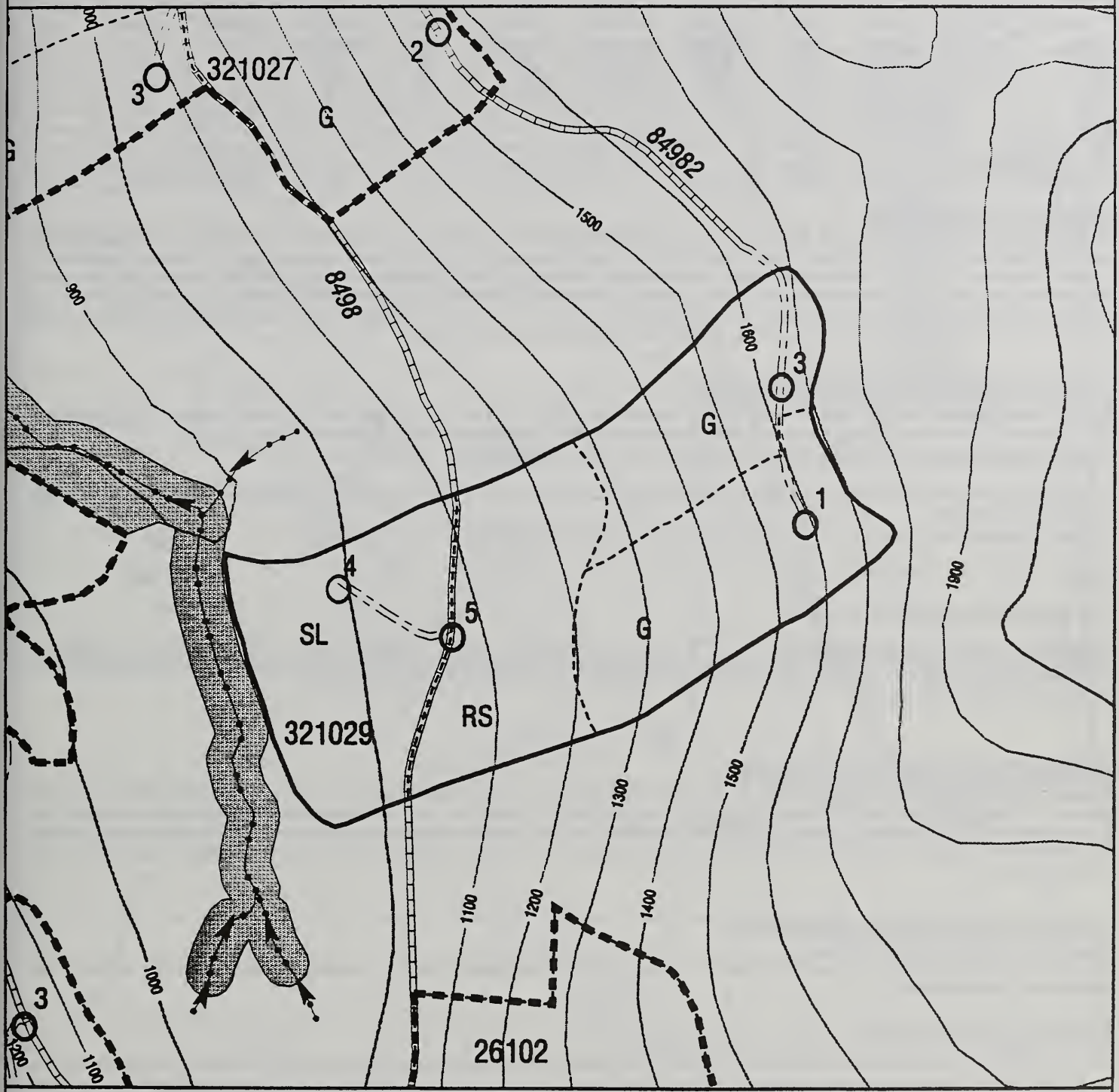
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321029 ALTERNATIVE(S): B C D E

ACRES: 74.36 TOTAL NET MBF: 2123 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 25 ROLL NO.: 888 PRINT NO.: 178



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 82 | UNIT #: 321030 | MAP #: 157 | ACRES: 91

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 49 | PHOTO #'S: 884-131 | ALTERNATIVE(S): B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	74.5	82%	S-MH	390-510	45	M	MP	L	M	L
VC-5	27.0	8.5	9%	S-HC	390-220	50	M	MP	L	M	L
VC-6	39.5	7.8	9%	S-HC	390-220	55	M	M	L	M	H
VC-7	56.7	-	0%	-	-	-	-	-	-	-	-
Low	5.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		90.8	100%	-	-	46	M	MP	Mistletoe	M	L

STAND CHARACTERISTICS

Generally mosaic of two storied stands in the W. hemlock/Y. cedar, mixed conifer and Sitka spruce series. The unit is composed of medium to large, moderate quality sawtimber with moderate amounts of utility pulp. Slopes range from 10 to 70% with steeper pitches up to 110%. Aspects range from NW to N which are bisected by a number of small creeks. This unit is adjacent to flat muskeg areas to the east, as well as steep hazard class 4 soils to the west.. Overstory ages are 200 to 320 years old with moderate defect and significant amounts of conk, mistletoe, mechanical/animal damage and windthrow. The understory is typically <20% stocked with 20 to 40+ year old W. hemlock and Sitka spruce which occur in groups throughout with poor to good vigor. Ground cover is moderate to dense vaccinium associated with skunk cabbage and devils club. Site is fair to good over the unit as a whole. Sensitive soils areas avoided during unit layout.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Boundary along NW section slightly modified avoids hazard class 4 soils. Snag retention not advisable due to safety. Tail trees available. Temp. Spur Road for 10 stations to landing 6 easy construction. Temp road to landing # 1 is 23 stations. Poss. rock pit at sta. 17+50 Rd 84964-1.

Visual Resource Management: VQO: Partial Retention Unit tucked into topography. Should meet VQO. Probably not seen.

Soils / Geology: Upper part of proposed unit was class 4 soil (paper plan). Observed from air on 8/11/94. The area of concern has been eliminated from the unit during actual layout-unit is now OK.

Fisheries / Watershed: No streams in unit- creek near north border is class III due to waterfalls downstream near unit 321028.

Wildlife: Survey for marbled murrelets- low density.

Cultural / Recreation / Subsistence: No Concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 and better with diseased, mature overstory to a vigorous young stand.
(2) Provide for programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut best meets the management objectives because: The system provides a high volume return from a stand that is past its peak productivity. There are no sensitive streams in or adjacent to the unit. that require additional protection. Substantial retention of green trees would result in windthrow which may be detrimental on sensitive soils within the unit. The unit is probably not seen in the viewshed. Shelterwood and group selection are not operationally feasible due to terrain and vegetation limitations, and not desirable with dwarf mistletoe infection and trees of poor crown structure. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The western unit boundary is adjacent to hazard class 4 soils. The northern and eastern boundaries ar adjacent to muskeg/low site areas. The southern boundary is the feasible extent of logging systems.

Soil, Water and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - TTRA Class 2 buffer.
BMP 13.9 Suspended Log Yarding - one end suspension to reduce sediment yield from Class 3 streams in unit. Close temporary spur roads after harvest. Waterbar and seed spurs as needed. Rip compacted soils on landings as needed.

Forest Productivity Activities:

(1) During precommercial thinning favor Sitka spruce and yellow cedar alo treat regeneration for dwarf mistletoe as needed.
(2) Disturb soils in non sensitive areas for site preparation during harvest.

MONITORING PLAN

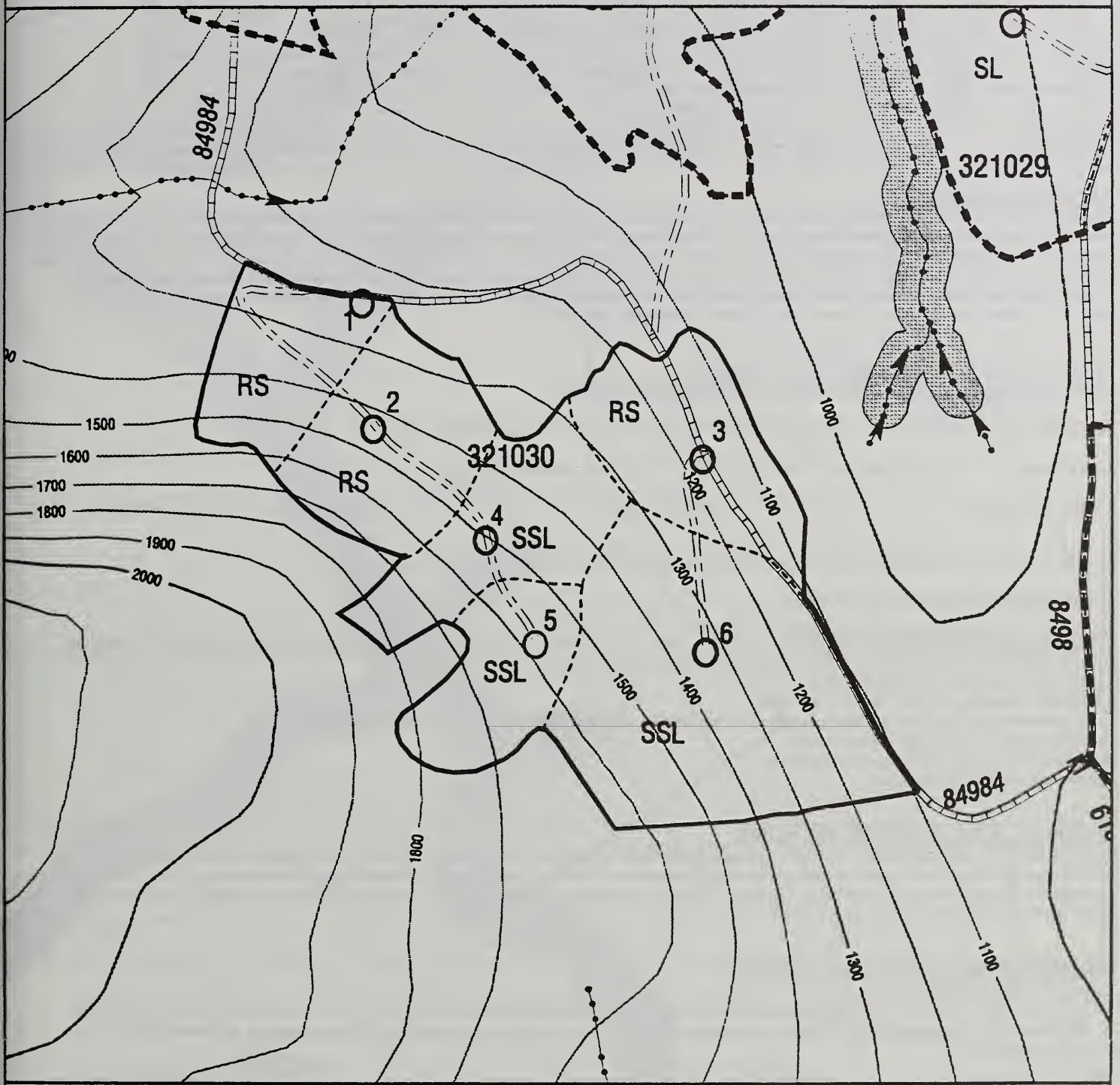
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321030 ALTERNATIVE(S): B C D E

ACRES: 90.79 TOTAL NET MBF: 1341.5 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 131



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 82 UNIT #: 321197 MAP # 116 ACRES: 58

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 49 PHOTO #'S: 684-128

ALTERNATIVE(S):

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	0.3	1%	-	-	-	-	-	-	-	-
VC-5	27.0	3.0	5%	WH	130-120	50	M	MP	M	M	H
VC-6	39.5	54.8	94%	WH	130-120	55	M	MP	L	M	H
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		58.1	100%	-	-	54	M	MP	mistletoe	M	H

STAND CHARACTERISTICS

Mid elevation stand of w. hemlock series, 95% VC6 and 5% VC5, composed of large sawtimber with low-average defect and high-average mortality. Stand structure is a mosaic of uneven-aged and 2-storied with overstory age 300+ years. Mature conifer understory and pole stock is fairly common and relatively free of bole defect, but mostly has sparse, small crowns. Slopes are moderately steep to very steep, with extremely steep side slopes of riparian channels prone to instability. Numerous class 3 drainages dissect the perennially wet slopes, and soils are somewhat poorly drained, to moderately well on micro sites. Understory is blueberry with abundant skunk cabbage throughout and shield fern on drier microsites. Advanced conifer regeneration of good form is sparse. Regeneration potential is moderate. Potential productivity is high. Windthrow, mistletoe, unstable stream channels, and visuals are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Helicopter harvest only. (2) Light partial harvest feasible.

Visual Resource Management: VQO: Partial Retention; VAC: Intermediate. (2) Low visual sensitivity.

Soils / Geology: (1) Unit originally had Hazard Class III and IV soils. Class IV soils eliminated from unit.

Fisheries / Watershed: (1) TTRA Class 2 stream at bottom western boundary of unit with two class 2 tributaries extending into the unit and forming the boundary.

Wildlife: (1) Recommend retention of green trees and snags for vertical habitat structure and other wildlife values.

Cultural / Recreation / Subsistence: No concerns/

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an over mature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Exclude Hazard Class IV soils from the timber base.
(7) provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Group selection is the selected alternative because it provides a feasible and low impact method to manage a stand with high value timber and high potential productivity where access and management options are limited because of watershed risks. Even-aged methods are not indicated because of the numerous channels in the stand and associated risks to fisheries from watershed impact. Sanitation salvage would not be as economic and would not provide as favorable conditions for regeneration and growth. Defer treatment would not provide a timber yield.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit is surrounded to the north, south, and east by soil hazard class 4 slopes; the north boundary buffers a large Class 2 v-notch stream, and the south boundary borders a lesser class 3 v-notch stream. The west boundary adjoins a class 2 stream buffer at the valley bottom, with two class 2 tributary buffers extending into the western unit interior.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Designate Water Quality Protection Needs - TTRA Class 2 stream buffers
BMP 13.9: Suspended Log Yarding - Helicopter
BMP 13.5: Protection of Potentially Unstable Areas - Exclude Hazard Class IV soils.
BMP 18.1: Group selection provides habitat structure, and avoids damage to fish habitat.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and blowdown of leave trees.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321197 ALTERNATIVE(S): B D

ACRES: 58.07 TOTAL NET MBF: 1947.8 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 128



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 82 | UNIT #: 321199 | MAP #: 106 | ACRES: 41

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 49 | PHOTO #'S: 684-127 | ALTERNATIVE(S): B, C, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	-	-	-	-	-	-	-	-	-	-
VC-5	27.0	19.3	47%	HC-WH	220-210	50	M	MP	L	L	M
VC-6	39.5	21.5	53%	WH	110-120	60	H	M	L	H	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		40.8	100%	-	-	55	H	M	mistletoe	M	M

STAND CHARACTERISTICS

Mid elevation stand of medium to large western hemlock and western hemlock-yellow cedar series. Defect and mortality is low to moderate. Stand structure is 2-storied in VC 6 and functionally even-aged in VC 5. Overstory age is 350+ years and the VC 6 understory cohort is 100 to 150 yrs old. The moderate west aspect has two class 3 v-notch streams. Soils are moderately well to somewhat poorly drained. Understory is blueberry, along with shield fern and devil's club in VC 6 and skunk cabbage in VC 5. Advanced conifer reproduction occupies less than 20% in the VC 5 but the younger cohort in the VC 6 occupies up to 60% of growing space. Regeneration potential is high in VC 6 and moderate in VC 5. Mistletoe is present but not abundant. Windthrow potential and slope stability are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) 90 ft slackline with 1 1/4" inch skyline. (2) Heavy partial harvest feasible below landing. (3) Complex guy anchors, split level landing, and tail trees required.

Visual Resource Management: (1) VQO: Modification; VAC: Intermediate. (2) Unit is hidden by topography and oblique angle to view from ferry or small boat.

Soils / Geology: (1) Middle slope is greater than 75% and instability evident. This area was then deleted.

Fisheries / Watershed: (1) TTRA Class 2 channel separates unit from muskeg to west. (2) TTRA Class 2 stream that downgrades to a Class 3 is located outside south boundary of unit. (3) Two small class 3 streams bisect unit east to west.

Wildlife: (1) No response to N Goshawk and marbled murrelet surveys.

Cultural / Recreation / Subsistence:

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory.
(2) Improve timber volume and value productivity.
(3) Mitigation of background visual impact on ferry route.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Exclude Hazard Class IV soils from the commercial timber base.
(6) Reduce sediment yield to fish bearing streams.
(7) Provide a programmed timber yield.
(8) Skyline with one end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative because timber yield and productivity is maximized and there is no conflict with visuals. The impact can be mitigated by feathering the lower unit edge, specifically leaving green culls in the outer parts of skyline corridors. Group selection was considered for the two-storied VC 6 but would have required helicopter harvest a; however, much of the stand with suitable structure was dropped for slope stability. Defer treatment would not provide a timber yield and would not regenerate a stand with high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The southeast boundary buffers a Class 2 with a break into a steep gradient Class 3 stream. The west boundary is a TTRA buffer on a Class 2 stream that separates the unit from a large muskeg.. The northwest boundary is a setting boundary leaving a future unit between 321199 and 321017. 321199 was originally the west half of paper-plan unit 321018. A north-south strip of unstable slope > 75% was deleted and separates 321199 from 321018. Timber from helicopter unit 321197 would be landed at the landing for 321199. Tying boundaries to low site and muskeg transition will mitigate windthrow on harvest unit edges.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs- Class 2 and Class 3 streams.
BMP 13.5 Protection of Potentially Unstable Areas.
BMP 13.15: Unit excludes muskeg to west.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and blowdown in the feathered edge.
Schedule PCT and favor YC and SS.

MONITORING PLAN

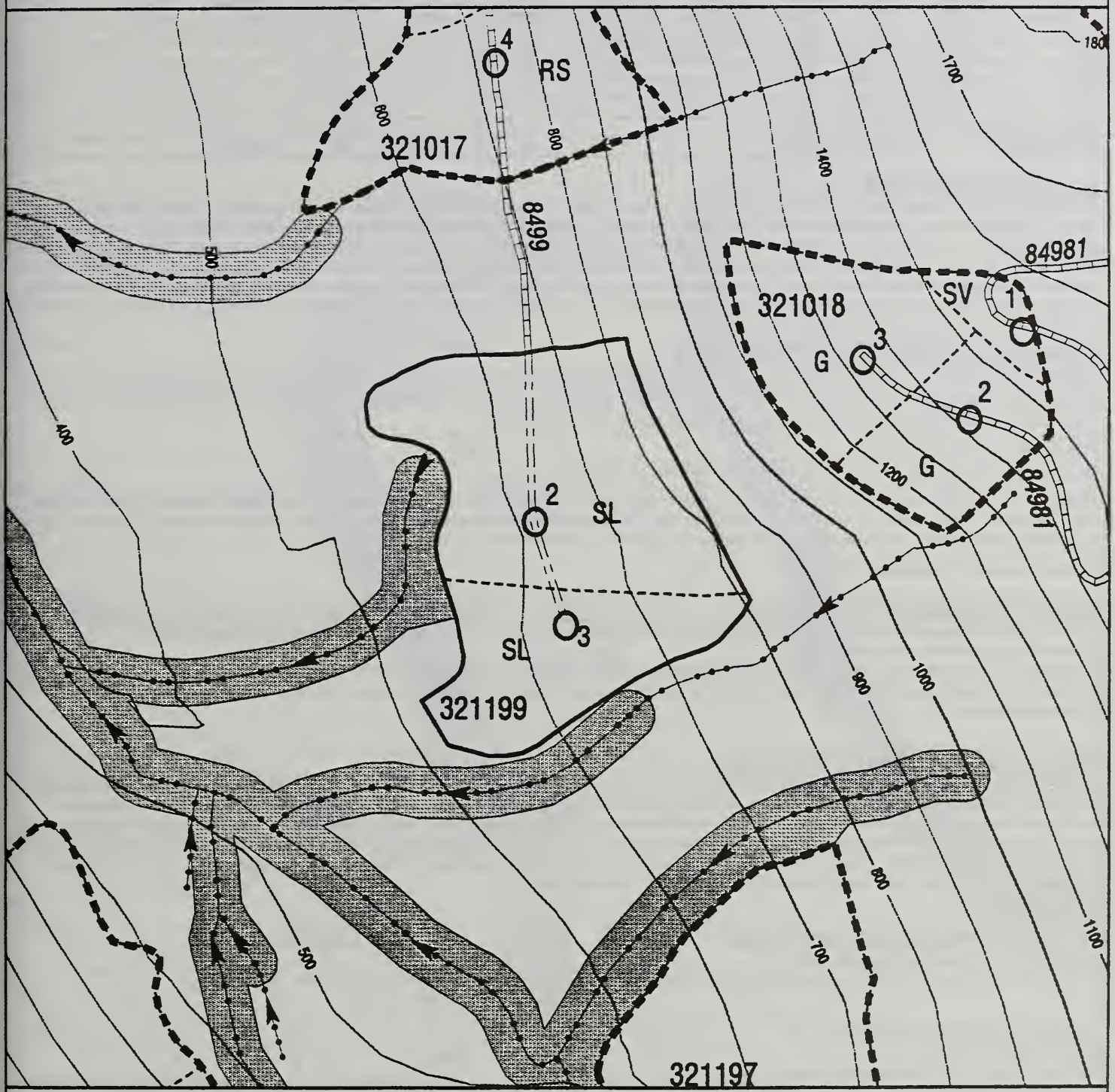
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 321199 ALTERNATIVE(S): B C D

ACRES: 40.85 TOTAL NET MBF: 1197.9 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 114



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322031	MAP #:	55	ACRES:	44
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	25			PHOTO #'S:	684-125
						ALTERNATIVE(S):	C, D

Timber Volume Class	Strata Avg. Volume Net + Utilit	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	14.6	33%	XC-H	410-110	50	L	MP	L	M	L
VC-5	26.9	13.1	30%	H	110	55	M	M	M	H	L
VC-6	39.4	14.5	33%	H	120	60	H	G	L	H	L
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	2.2	5%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		44.4	100%	-	-	52	M	M	Mistletoe	H	L

STAND CHARACTERISTICS

Even aged functional in volume class 6 and multiple storied stand in volume class 4 the w. hemlock and mt. hemlock series respectively. This stand also has small amounts of Sitka spruce and y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to30% on aspects from NE bounded by 2 significant class I & II V-notch creeks. The eastern portion of the unit is bounded by the class I creek. Overstory ages are 200 to 350 years old with moderate high defect and significant amounts of conk, mistletoe, mechanical/animal damage, windthrow. The understory is <20% stocked with 20 to 80 year old w. hemlock and Sitka spruce which occur in groups throughout with poor to good vigor. Ground cover is sparse to moderately dense with Vaccinium associated with shield fern in VC 6 and with skunk cabbage and rusty menzesia in the VC 4 area. Some new windthrow found throughout unit. Volume class 6 area is the result of old wind event. Site is poor to very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Highlead. Unit partially suitable for partial harvest. Snags are safety issue. Some tailholds required within stream buffer.

Visual Resource Management: VQO Partial retention. Cumulative effects with adjacent units results in modification. Impacts softened by large untouched foreground. Recommend irregular edges ,feathered edges, alt. harvest methods. Unit is not a major impact.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Class I & II buffers on each side of this unit are buffered.

Wildlife: Conducted goshawk surveys, no response. Conducted songbird survey, no unusual response. Habitat suitable for red breasted sapsucker, marten and black bear. Recommend leaving green trees and snags for habitat structure. Clearcut with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be in vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4,5& 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings on the break in slope between VC 6 and VC4 areas.
(4) Retain minor amounts of green cull or high defect trees in the west line for vertical stand structure and cavity nesting habitat.
(5) One end suspension

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserves individual trees (green cull) on the break in slope between VC6 and VC4 when feasible, and scallops edges between settings on the lower slope that may be visible from Port Houghton. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls, yellow cedar or less common Sitka spruce when found. Reserves will provide wildlife habitat as well as a source of blowdown for ecological functioning. Tall timber to the north of the unit will partially hide the unit from view. Trees are 100-110 feet in total height. Shelterwood and group selection are not feasible with logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded to the west, east and a portion of the north by stream buffers. The south is generally bounded by low site area.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Directional falling.
BMP 18.1: Reserve trees maintain habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notch area with Sitka alder.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322031 ALTERNATIVE(S): C D

ACRES: 44.48 TOTAL NET MBF: 988.8 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 25 ROLL NO.: 888 PRINT NO.: 174



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322032	MAP #:	67	ACRES:	26
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	49			PHOTO #'S:	684-125
						ALTERNATIVE(S):	B, C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	-	0%	-	-	-	-	-	-	-	-
VC-5	26.9	-	0%	-	-	-	-	-	-	-	-
VC-6	39.4	26.4	100%	H	110-120	80	H	M	H	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		**26.4**	**100%**	-	-	**80**	**H**	**M**	Mistletoe	**H**	**M**

STAND CHARACTERISTICS

Even aged functional stand in the w. hemlock series. This stand also has trace amounts of Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 30 to 60% on NE aspects bisected by 3+ small creeks, including 2 small high gradient V-notch. The eastern portion of the unit is bounded by a class II stream buffer. Overstory age is 350 years old with moderate to high defect and significant amounts of conk, mistletoe, mechanical/animal damage, defoliators, and windthrow. The understory is 20-40% stocked with 20 to 50 year old w. hemlock which occur in groups throughout with fair to good vigor. Ground cover is moderate to dense Vaccinium associated with WH reproduction, devils club, and shield fern. Significant ongoing windthrow found throughout the unit . Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline. Split yard away from small V-notch near center of unit. Retain green cull and understory at setting boundaries. Tailtrees required.

Visual Resource Management: VQO modification. Viewed from the middle ground of small boat route. Unit meets VQO, but cumulative effects with other units results in VQO exceeding. Recommend dropping units, partial harvest, retention of green trees, reconfiguration by rounding unit corners.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Buffers established 120'+ from streams. Two class III V-notches through unit. Survey complete on class II stream.

Wildlife: Conducted goshawk survey, no response. Conducted songbird survey, no unusual birds. Red squirrel. Habitat for red breasted sapsucker, marten, and black bear. Recommend leaving green trees and snags for habitat diversity and structure. Clearcut with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be in vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings and rounding unit corners on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the west line for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on upper slopes along the east line above the 8495 road when feasible and scallop edges between settings on the upper slope that may be visible from Port Houghton. Selected alternative provides good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls or less common Sitka spruce when found. Reserves will provide wildlife habitat as well as a source of blowdown for ecological functioning. Also during final layout round upper edges of unit for visual mitigation. Tall timber to the east and north of the unit will partially hide the unit from view. Trees are 100-120 feet in total height. Shelterwood and group selection are not feasible with logging system and not desirable with dwarf mistletoe infection. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East boundary is class II stream buffer. West boundary is adjacent to hazard class IV soils. North and south boundaries are at edge of logical logging limits.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Split yard away from V-notch in center of unit between settings. Suspend logs over the other small V-notch as much as possible. Seed V- notch with Sitka alder.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notches area with Sitka alder for slope stabilization.
(4) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

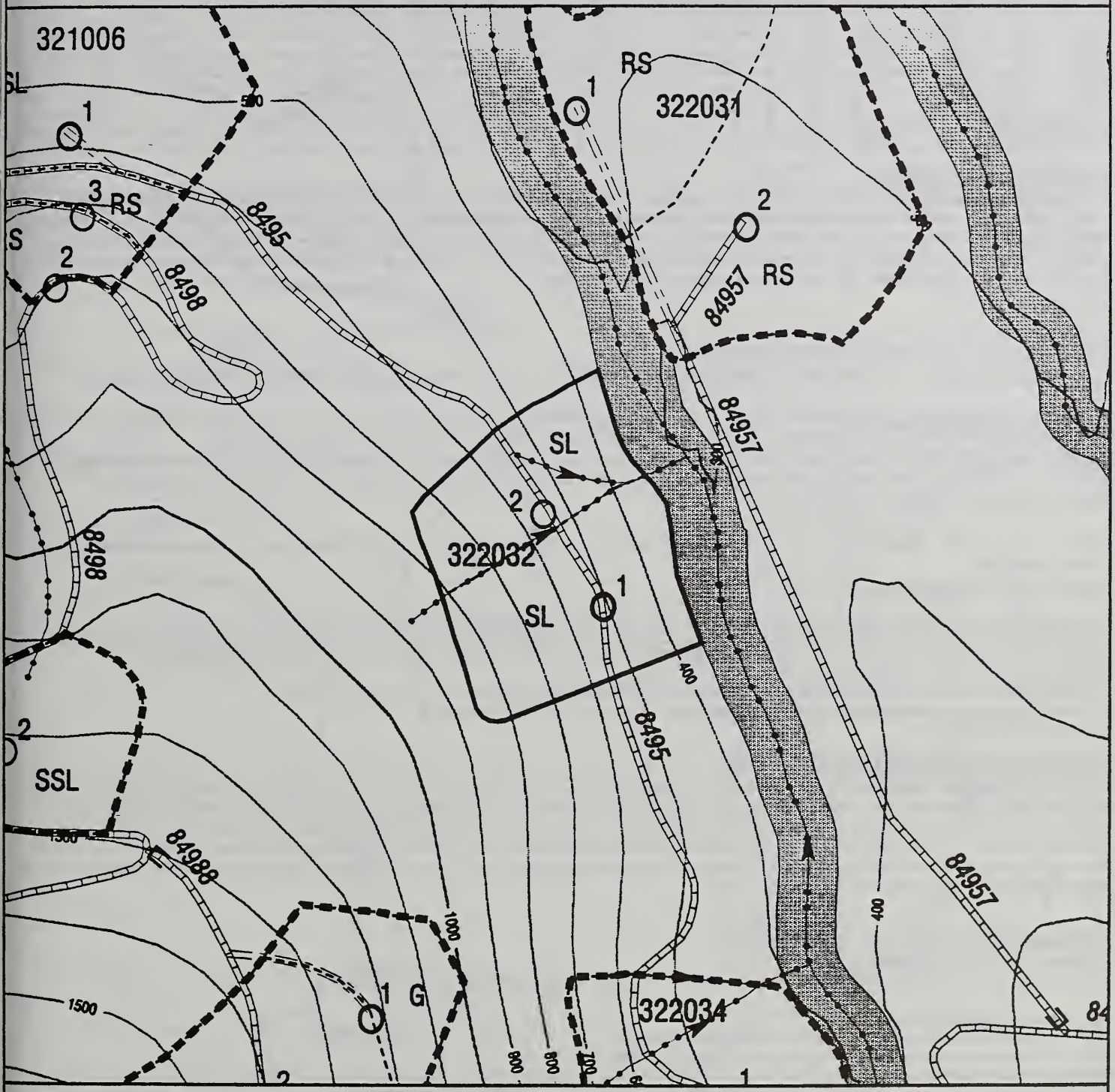
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322032 ALTERNATIVE(S): B C

ACRES: 26.37 TOTAL NET MBF: 901 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 125



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322033	MAP #:	79	ACRES:	35
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	49			PHOTO #'S:	684-126
						ALTERNATIVE(S):	B, C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	-	0%	-	-	-	-	-	-	-	-
VC-5	26.9	1.4	4%	H	120	65.00	M	M	-	H	H
VC-6	39.4	34.0	96%	H	120-110	70.00	M	M	-	H	H
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		35.4	100%	-	-	70	M	M	-	H	H

STAND CHARACTERISTICS

Even aged functional stand in the w. hemlock series. This stand also has Sitka spruce and a trace of y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 30 to 55% on aspects from NE to E. Overstory ages are 250 to 400 years old with moderate defect and significant amounts of conk, mechanical/animal damage and windthrow. The understory is <20% stocked with 20+ w. hemlock and Sitka spruce which occur(in groups, throughout with fair to good vigor. Ground cover is sparse to dense Vaccinium associated with devils club and shield fern. Some evidence of new windthrow found on the upper portion of the unit. Site is good to very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline. East setting was shortened to conform to logical yarding limits. Retention possible. 22 stations of temporary road required.

Visual Resource Management: VQO modification. Viewed from middleground on small boat route. Unit meets its VQO but cumulative effects with adjacent units results in modification beyond the VQO. Recommend drop units, partial cut, green cull retention, reconfigure units and round edges of cuts. Priority 1.

Soils / Geology: No on site investigation. Aerial reconn and discussion with eng. crew. There does not appear to be major stability problems associated with this unit. NE corner was altered because it had some old chutes. Harvesting should not create a stability problem. Mapped stability class III area adjacent to east class IV.

Fisheries / Watershed: No streams- No concerns.

Wildlife: Habitat suitable for brown creeper, marten, black bear. Marginal for deer. Maintain live trees and snags for habitat diversity. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5& 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by utilizing shelterwood method and rounding unit corners on the upper slopes.
(4) Retain green cull or high defect trees in the west line for vertical stand structure and cavity nesting habitat.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) Provides a moderate volume return from a stand that is past its peak productivity.(2) Reserve individual trees (green cull) uniformly with Shelterwood on north setting. Provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls, y. cedar or Sitka spruce when found. Reserves will provide wildlife habitat as well as a source of blowdown for ecological functioning. Also during final layout round edges of unit for visual mitigation. Other alternatives that were rejected: Clearcut would not mitigate wildlife and visual concerns. Group selection would not be as feasible operationally, and would not create the desired vertical structure over the long term. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northeast portion of boundary against old V-notch or chute. Balance of unit is bounded for logical harvest unit along mainline road and spur.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Directional fall away from any V-notch or chute adjacent to the unit.
BMP 12.17: Seed disturbed chute or V-notch area with Sitka alder as needed.
BMP 18.1: Shelterwood mitigates habitat loss.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notch area with Sitka alder if needed.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

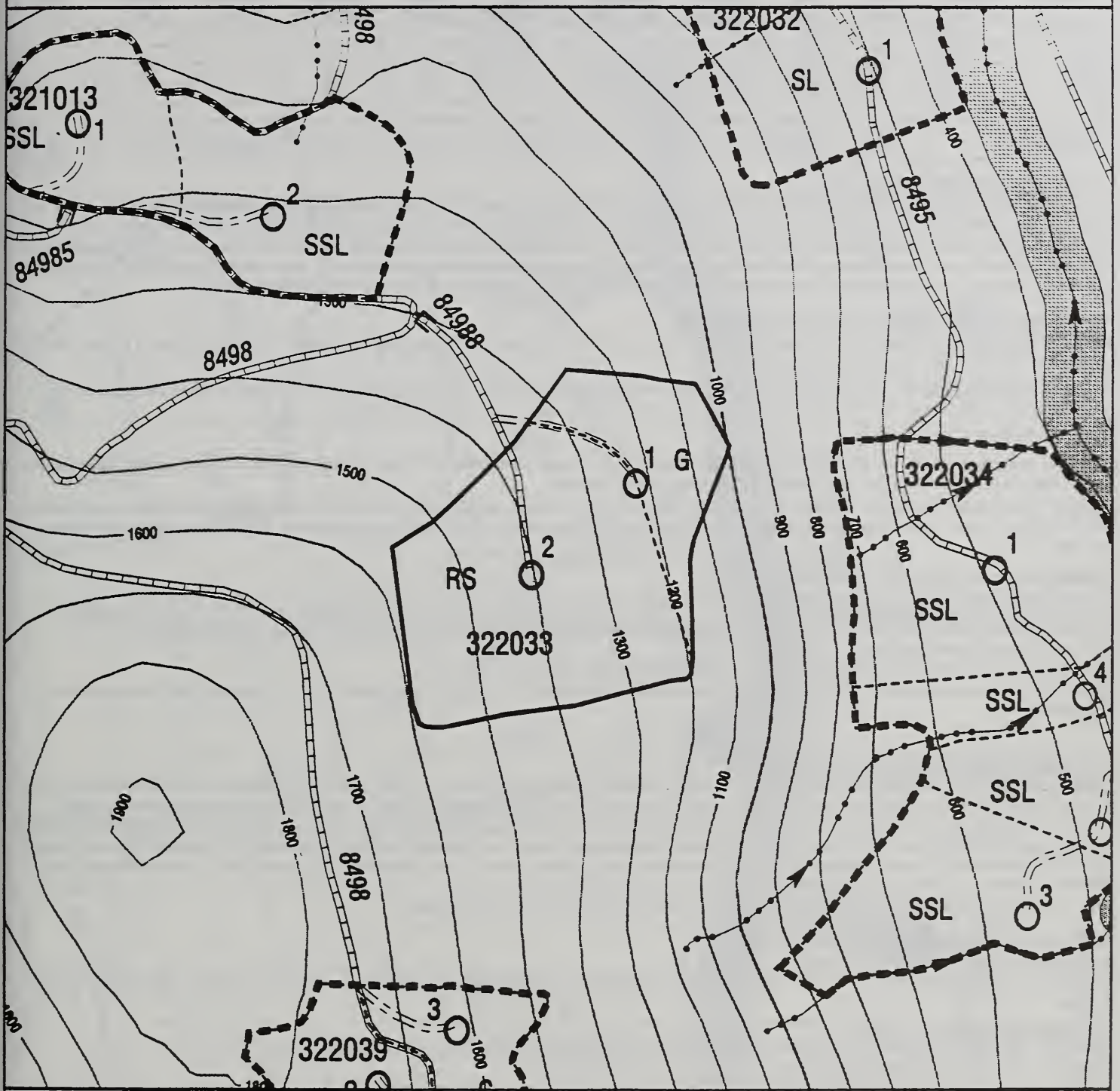
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322033 ALTERNATIVE(S): B C

ACRES: 35.39 TOTAL NET MBF: 1208.3 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 126



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322034	MAP #:	81	ACRES:	57
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	25			PHOTO #'S:	888-175
						ALTERNATIVE(S):	B, C, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	-	0%	-	-	-	-	-	-	-	-
VC-5	26.9	-	0%	-	-	-	-	-	-	-	-
VC-6	39.4	55.9	99%	H-S	140-320	80	H	M	L	H	M
VC-7	56.8	0.6	1%	H	140	85	H	G	L	H	H
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		56.5	100%	-	-	80	H	M	Mistletoe	H	M

STAND CHARACTERISTICS

Mosaic stand in the w. hemlock and Sitka spruce series. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 90% on aspects from NE to E which are bisected by a significant V-notch creek. The eastern portion of the unit is bounded by a class II buffer. Overstory ages are 150 to 350 years old with moderate to high defect and significant amounts of mistletoe, mechanical/animal damage and windthrow. The understory is 20-40% stocked with 20 to 50 yearold w. hemlock and Sitka spruce which occur in groups throughout with fair to good vigor. Ground cover is sparse to moderately dense vaccinium associated with devils club, shield fern, and skunk cabbage. Continuous windthrow found throughout the unit. Site is good to very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Small slackline. Class III stream in center of unit will be split yarded. Extensions required outside of unit. Snag retention is a safety issue. Rig through stream buffers. 10 station temporary road required.

Visual Resource Management: VQO Modification. Viewed from the middle ground of small boat route. Unit meets its VQO. Cumulative impacts with adjacent units results in impact exceeding the VQO. This unit probably OK. Narrow at top is good. Leave brush as possible. Priority 2.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Buffer est. at minimum of 100 feet from class II stream. Reach survey complete. Stream in center of unit found to be class III. Stream at south end is Class II and then becomes Class III. Streams at northend are class III V-notches.

Wildlife: Conducted goshawk survey, no response. Conducted songbird survey, no unusual response. Saw bear and moose sign. Habitat suitable for hairy woodpecker, red breasted sap sucker, brown creeper, marten and black bear. Recommend leaving green trees and snags for habitat structure. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 &7 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the west line for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on upper slopes along the west line above 8495 road when feasible and scallop edges between settings on the upper slope that may be visible from Port Houghton. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls, or less common Sitka spruce when found. Reserves will provide wildlife habitat as well as a source of blowdown for ecological functioning. Tall timber to the north of the unit will partially hide the unit from view. Trees are 100-140 feet in total height. Unit is generally oblique to view. Shelterwood and group selection are not feasible with logging system and not desirable with dwarf mistletoe infection and trees of poor crown structure.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East boundary is the buffer of the class II V-notch. North and south boundaries are the of the class II & III V-notch creeks. The western boundary represents the logical logging

Soil, Water, and Wildlife Conservation:

BMP 13.9: Split yard and suspend logs over class III streams. Directional falling away from buffers and V-notch class III streams.
BMP 12.17: Seed disturbed V-notch areas with Sitka alder as needed for soil stabilization.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notch area with Sitka alder.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322034 ALTERNATIVE(S): B C D

ACRES: 56.46 TOTAL NET MBF: 1910.4 QUAD(S): SUM85 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 25 ROLL NO.: 888 PRINT NO.: 175



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322035	MAP #:	83	ACRES:	35
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-140
						ALTERNATIVE(S):	B, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	7.5	21%	HC	230-210	45	M	MP	L	M	L
VC-5	26.9	27.6	79%	HC-HS	220-330	60	M	MP	L	H	L
VC-6	39.4	-	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		35.1	100%	-	-	57	M	MP	M-toe/decline	H	L

STAND CHARACTERISTICS

Multiple storied stand in the Sitka spruce, w. hemlock/y. cedar series. The stand is composed of medium to large, high quality sawtimber with minor amounts of utility pulp. Slopes range from 0 to 90% on aspects from N to NE. The southern portion of the unit is bounded by a ridgetop/muskeg and flat muskeg to the north. Overstory ages are 150 to 300 years old with high defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage, defoliators and windthrow. The understory is <20% stocked with 20 to 80 year old W. hemlock and Sitka spruce which occur in groups throughout with poor to fair vigor. Ground cover is dense Vaccinium associated with rusty menziesia, devils club and skunk cabbage. Significant windthrow events created uneven age condition with pockets of varying age timber and premerch. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline. Unit boundary avoids low site area and captures merchantable timber. 8 sta. temp.road req'd. Recommend grouping snags and leave trees in low volume area between settings 3 & 4 for visual and wildlife mitigation. Not otherwise suitable for partial cut.

Visual Resource Management: VQO Modification. Viewed from the background of small boat route and ferry route. Unit meets VQO, but cumulative effects with adjacent units results in modification exceeding the VQO.

Soils / Geology: No concerns listed.

Fisheries / Watershed: No streams No Concerns.

Wildlife: Habitat suitable for red breasted sapsucker and black bear. Reserve habitat near stream-(this area was reserved).

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 &5 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the west line for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on upper slopes when feasible and scallop edges between settings on the upper slope that are be visible from Port Houghton. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls, or less common Sitka spruce or y. cedar when found. Reserves in this unit will generally occur between settings in an island.
Shelterwood and group selection are not feasible with logging system and not desirable with dwarf mistletoe infection and trees of poor crown structure.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

North, south and east boundaries adjacent to low site/ muskeg areas. West line is the logical logging system boundary.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Reserve trees provide cavity nesting habitat.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322035 ALTERNATIVE(S): B E

ACRES: 35.07 TOTAL NET MBF: 747.2 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 140



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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322036	MAP #:	96	ACRES:	15
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-139
						ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	-	0%	-	-	-	-	-	-	-	-
VC-5	27.0	2.4	16%	H	110	60	M	MP	L	H	L
VC-6	39.5	12.7	84%	H	110-140	75	H	M	M	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		15.1	100%	-	-	73	H	M	Windthrow	H	M

STAND CHARACTERISTICS

Multiple storied stand in the w. hemlock series. This stand also has Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 25 to 90% on aspects from N to NE. The western portion of the unit is bounded by a ridgetop/muskeg. Overstory ages are 250 to 350 years old with moderate to high defect and significant amounts of conk, root rot, mechanical/animal damage, and some windthrow. The understory is 40-60% stocked with 20 to 60 years old w. hemlock and Sitka spruce which occur in groups throughout with fair to good vigor. Ground cover is dense vaccinium associated with devils club, shield fern, and skunk cabbage. Site is very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: 70' slackline. Boundary was modified to avoid class IV soils, low site and to improve deflection. Not suitable for partial cutting. Snags are a safety issue. Complex anchors, tailtrees required. 15 stations of temporary road required.

Visual Resource Management: VQO Partial retention. Viewed from background of small boat route. Cumulative impacts with adjacent units results in modification exceeding the VQO. Reduce impact by dropping units or reducing unit size, retention of green culls and snags. Unit conforms nicely to the topography. Priority 2.

Soils / Geology: No concerns listed.

Fisheries / Watershed: No concerns as configured. Class I stream to the east has extended buffer.

Wildlife: Habitat for red breasted sapsucker and black bear.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5 & 6 with diseased, mature overstory to a vigorous young stand.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts by unit configuration and size combined with mitigation's in adjacent units.
(4) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut best meets resource objectives because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Generate a new vigorous stand. (3) This small unit conforms well to the topography and will be less noticeable with visual mitigation in adjacent units. (4) Reserves will provide wildlife habitat as well as a source of blowdown for ecological functioning. Other alternatives rejected: Shelterwood, group selection, or overstory not reasonable due to logging constraints. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded to the east by a class I stream buffer. Bounded to the west by low site area.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Unit boundary maintained at least 100 ft. from Class I stream.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

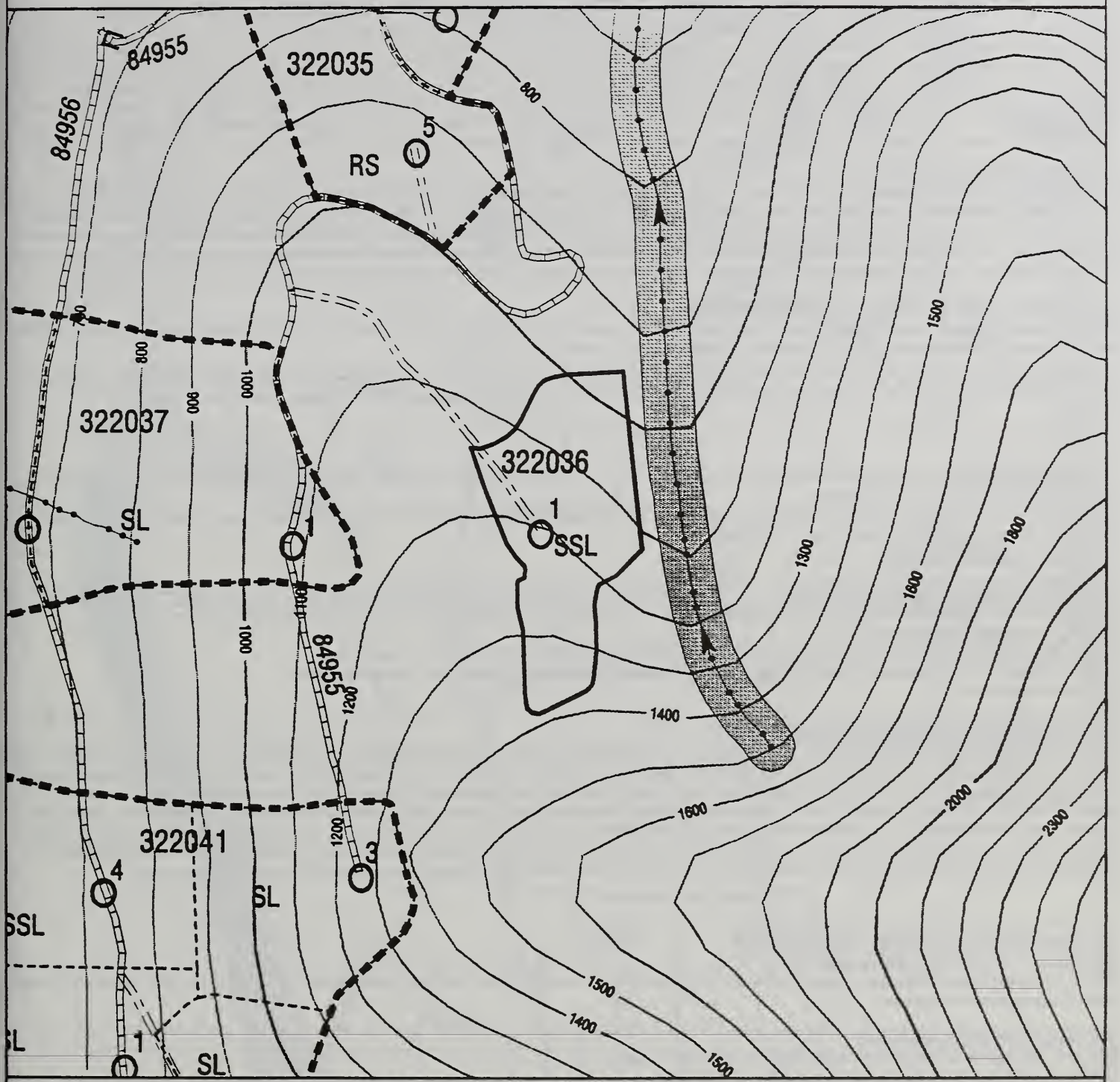
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322036 ALTERNATIVE(S): B D E

ACRES: 15.06 TOTAL NET MBF: 490.6 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 139



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322037	MAP #:	94	ACRES:	45
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-139
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	-	0%	-	-	-	-	-	-	-	-
VC-5	26.9	45.0	100%	H	130-140	60	L	MP	-	M	M
VC-6	39.4	-	0%	-	-	-	-	-	-	-	-
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		45.0	100%	-	-	60	L	MP	-	M	M

STAND CHARACTERISTICS

Multiple storied stand in the w. hemlock series. This stand also has Sitka spruce and trace amounts of y. cedar in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 90% on aspects from NE to S which are bisected by 3 significant V-notch creeks. The eastern portion of the unit is bounded by a ridgetop/muskeg. Overstory ages are 250 to 350 years old with moderate defect and significant amounts of mechanical/animal damage and minor windthrow. The understory is 20-40% stocked with 20 to 80 year old W. hemlock and Sitka spruce which occur in groups throughout with poor good vigor. Ground cover is moderate to dense Vaccinium associated with devils club, skunk cabbage and shield fern. . Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running Skyline in lower setting and Slackline in upper setting. Split yard at class III V-notch. Lower landing is continuous along the 84956 road. Unit reconfigured to avoid fish habitat to west. Suitable for partial harvest. Snag retention is a safety issue.

Visual Resource Management: VQO Modification. Viewed in mid-ground of small boat route. Cumulative impacts with adjacent units results in modification exceeding the VQO. Reduce impacts by 1/3 to 1/2. Unit better than others. Oblique to view, round top narrowing downslope are good mitigation. Leave trees. Priority 2.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Unit reconfigured to exclude fish habitat. Creek running up through center of unit is V- notch. Retain 50 percent of the shade producing vegetation on the SE, S, SW and W banks of Class III streams.

Wildlife: Survey for goshawk- no response. Survey for marbled murrelet- high density. Red-tailed hawk observed. Recommend leaving reserve trees and snags for habitat structure. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5, with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention along V-notch creek, shelterwood method on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the lower setting for vertical stand structure and cavity nesting habitat.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserves individual trees (green cull, high defect trees, S. spruce and y. cedar) and groups to meet resource objectives and still provide a high timber return. Visual quality and resource protection are further enhanced by feathering of edges along class III V-notch on the lower setting. Retain green cull and high defect trees around the balance of the unit at a rate of 8-15 per acre. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls, y. cedar or less common Sitka spruce when found. Also during final layout round edges of unit for visual mitigation. Clearcut and clearcut with reserves would not mitigate wildlife and visual concerns as well Group selection does not reserve trees to meet structural objectives, and provides less volume at more cost. In addition, there are more opportunities for the small units to ravel through edge blowdown. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The west line is bounded by fish habitat and a muskeg/low site area. The east line is bounded by road 84955 and low site areas. The north and south boundaries are the logical extent of logging systems capabilities.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Split yard away from V-notch. Reserve trees in unit and at V- notch.
BMP 12.17: Seed V- notch in disturbed areas as needed with Sitka alder.
BMP 13.15: Unit configured to exclude muskeg.
BMP 18.1: Shelterwood provides habitat structure for cavity nesters.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notch area with Sitka alder.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

Date	Activity	Standard	Who
Year 3	Stocking survey & reserve tree assessment.	>300TPA, plant SS if not at 50TPA	Silviculturist
Year 5	Stocking survey and certification	>300TPA; crown closure	Silviculturist
Year 15	Precommercial Thin Survey	200TPA free to grow	Silviculturist
Year 16-25	Schedule and certify Precomercial thinning	> 200TPA incl.>35 TPA of SS	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322037 ALTERNATIVE(S): B C D E

ACRES: 44.98 TOTAL NET MBF: 1075.3 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 139



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322039	MAP #:	93	ACRES:	27
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	49			PHOTO #'S:	684-126
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6		0%	-	-	-	-	-	-	-	-
VC-5	26.9	20.2	76%	H	110-130	55	M	MP	-	M	L
VC-6	39.4	6.4	24%	H	120-140	65	M	M	-	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		26.6	100%	-	-	57	M	MP	-	M	L

STAND CHARACTERISTICS

Even aged functional with patches of two-storied stands in the w. hemlock series. This stand also has Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from1 0 to 110% (only short steeper pitches.) on aspects from NE to E which are bisected by 3+ small creeks. The eastern portion of the unit is bounded by a ridgetop/muskeg. Overstory ages are 300 years old with moderate defect and significant amounts of conk, mechanical/animal damage, and evidence of windthrow activity. The understory is <20% stocked with 20 to 50 year old w. hemlock in groups throughout with good vigor. Ground cover is sparse to moderately dense Vaccinium associated with devils club, shield fern and skunk cabbage. Scattered windthrow found throughout. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: NW setting Slackline; East settings Gravity Return. SW setting Shovel. 90 foot tower in cable area. Not suitable for partial cut. Snag retention is a safety issue. Complex anchors, tailtrees, required. 21 stations of temporary road required.

Visual Resource Management: VQO Modification. Viewed from the middleground from small boat route. Cumulative impacts with adjacent units result in modification exceeding the VQO. Reduce impacts. This unit looks good. Narrow base and rounded tops emulates natural openings. Priority 2.

Soils / Geology: No concerns listed.

Fisheries / Watershed: No streams in unit - no concerns.

Wildlife: Habitat suitable for black bear.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5 & 6 with diseased, mature overstory to a vigorous young stand.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts by unit configuration and size combined with mitigation's in adjacent units.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Generate a new vigorous stand
(3) This small unit conforms well to the topography and will be less noticeable with visual mitigation's in adjacent units.
Shelterwood, group selection, or overstory not reasonable due to logging constraints and operational limitations.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded to the west by ridgetop and low site areas. Bounded to the east by steep class IV soils. Bounded to the north and south by logical harvest system limits and settings retained between other units.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Unit configured to avoid steep Hazard Class-IV soils.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322039 ALTERNATIVE(S): B C D E

ACRES: 26.88 TOTAL NET MBF: 704.7 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 49 ROLL NO.: 684 PRINT NO.: 126



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322040	MAP #:	110	ACRES:	56
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	25			PHOTO #'S:	888-176
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	17.1	31%	H	130	55	L	P	-	M	L
VC-5	26.9	34.4	61%	H	110-120	60	M	MP	-	H	L
VC-6	39.4	4.5	8%	H	120	70	M	M	-	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		**56.0**	**100%**	H	-	**59**	**M**	**MP**	-	**H**	**L**

STAND CHARACTERISTICS

Even aged functional, mosaic, two-storied, multiple storied stand in the w. hemlock series. This stand also has minor amounts of Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with minor amounts of utility pulp. Slopes range from 20 to 40% on E aspects bisected by several small creeks. The western portion of the unit is bounded by a ridgetop/muskeg. Overstory ages are 200 to 300 years old with high defect and significant amounts of conk, mechanical/animal damage, defoliators, wind damage. The understory is 21%-40% stocked with 20 to 60 year old w. hemlock which occur in groups throughout with fair to good vigor. Ground cover is sparse to dense vaccinium associated with skunk cabbage and shield fern. Portions of the unit have very open "park like" ground cover. Shorter dense stands in this unit generally appear to be wind firm in their present condition. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Slackline with 90 foot tower. Tailtrees required. Unit has a potential for a heavy partial cut. Snag retention is a safety issue.

Visual Resource Management: VQO Max. Modification. Viewed from the background of small boat route. This unit meets VQO. Cumulative impact with adjacent units results in modification exceeding the VQO for the area as a whole. Priority 2

Soils / Geology: North end of unit originally mapped as hazard class IV soil. Field check with USFS determined this area should be hazard class III soil.

Fisheries / Watershed: Class III stream at north end of unit. Small V-notch present representing unit boundary.

Wildlife: No concerns.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4,5& 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by the use of shelterwood to the north and south.
(4) Retain amounts of green cull, S. spruce or high defect trees in the north and south setting for vertical stand structure and cavity nesting habitat.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut and Shelterwood with reserves was selected because: Overall provides a high volume return from a stand that is past its peak productivity. Reserve individual trees (green cull, high defect and Sitka spruce) uniformly with **Shelterwood** on north and south setting. This harvest method will retain significant biological structure for habitat and visual mitigation while being operationally feasible. Approximately 80% to 85% of the volume in these settings will be harvested. Site quality will be maintained or improved. Warmer soil will increase biological activity and increase decomposition of excess organic material. Some reserve trees will blow down creating pit and mound microtopography. and mixing mineral and organic soil layers and potentially reducing podzolization. Center 2 settings are **Clearcut** that will provide side by side adaptive management comparisons with shelterwood method. Group selection is not feasible with logging systems. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

West boundary is a ridge top muskeg - low site area. East boundary is the extent of feasible logging systems and some areas of hazard class IV soils

Soil, Water, and Wildlife Conservation:

BMP 18.1: Reserve trees will provide cavity nesting habitat.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notch area with Sitka alder.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

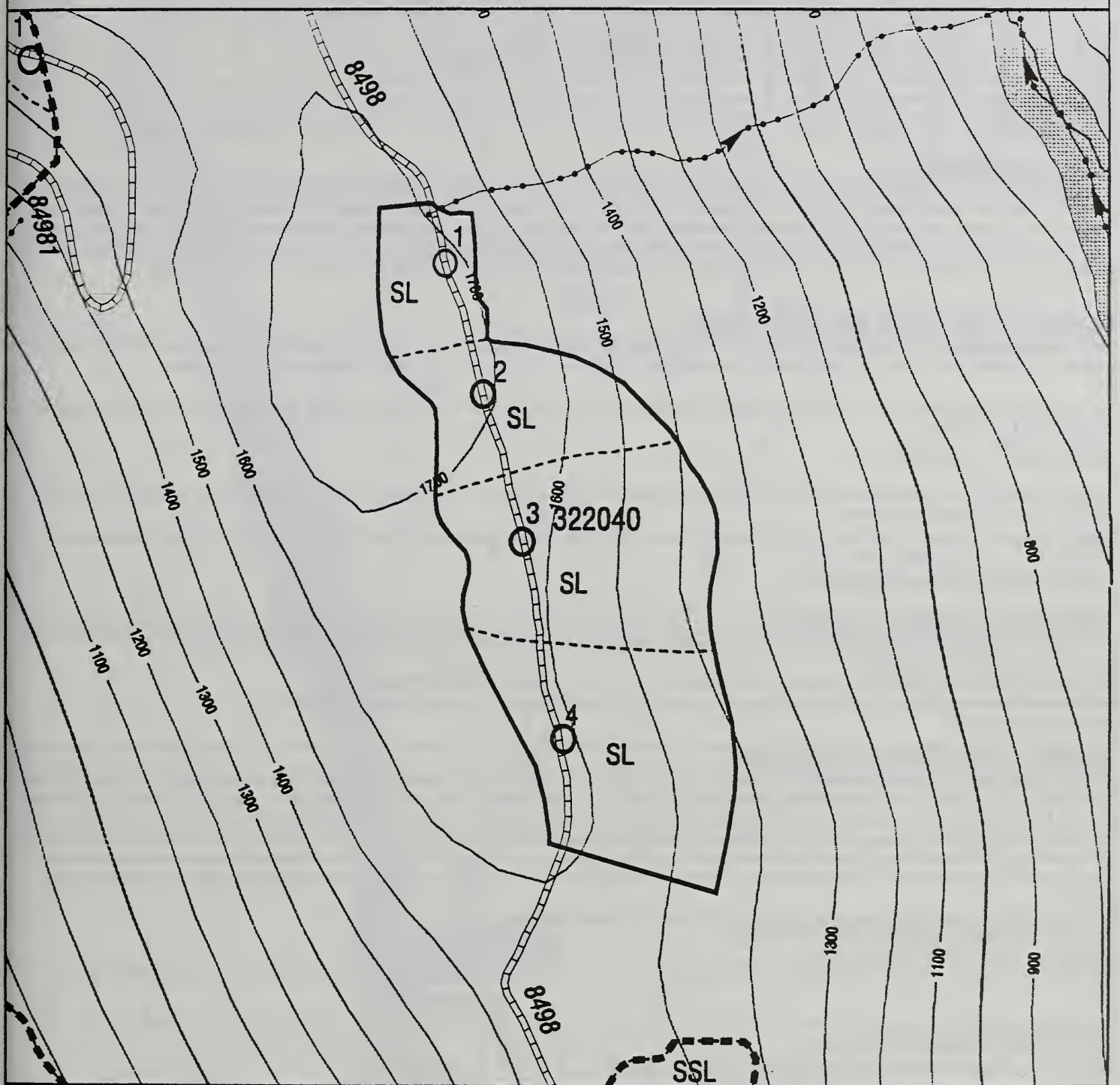
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322040 ALTERNATIVE(S): B C D E

ACRES: 55.98 TOTAL NET MBF: 1175.9 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 25 ROLL NO.: 888 PRINT NO.: 176



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322041	MAP:	108	ACRES:	79
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-138
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	7.1	9%	HC	210-220	50	M	MP	L	M	M
VC-5	26.9	6.1	8%	HC	210-221	60	M	MP	L	M	M
VC-6	39.4	65.6	83%	S-H	340-320	70	M	M	M	M	M
VC-7	56.8	0.2	0%	S	510	85	M	G	M	M	M
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		79.0	100%	-	-	67	M	M	Mistletoe	M	M

STAND CHARACTERISTICS

Two storied stands in the w. hemlock, Sitka spruce and w. hemlock/y. cedar series. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 80% on aspects from SW to W which are bisected by several small creeks . The western portion of the unit is bounded by a class II buffer. Overstory ages are 150 to 400 years old with moderate defect and significant amounts of conk, mistletoe, mechanical/animal damage, defoliators, windthrow. The understory is 20-40% stocked with 20 to 30 year old W. hemlock and Sitka spruce which occur in groups throughout with fair to good vigor. Ground cover is moderate to dense Vaccinium associated with devils club and skunk cabbage. Scattered new windthrow found throughout. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: 90' tower-Slackline. Unit extended to NW adequate trees for tail holds. 700 foot buffer between north boundary and unit # 322037 for wildlife concerns. Suitable for heavy partial cut. Snag retention is safety concern. Temp. rd. to #2 landing 14% fav. grade. Hoe and end haul construction.

Visual Resource Management: VQO Maximum modification. (partial retention above 1000 feet) Most of unit oblique to view. Should meet VQO. Keep top rounded to emulate natural forest opening.

Soils / Geology: No concerns listed.

Fisheries / Watershed: The unit boundaries are arranged to provide sufficient protection to the Class II stream adjacent to the unit. No special concerns were noted and no class III streams needed to be buffered.

Wildlife: Survey for goshawk- no response. Survey for marbled murrelet- high density. Recommend leaving live reserve trees and snags to maintain habitat structure. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class ,5 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2) Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention along V-notch creek, shelterwood method on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the lower setting for vertical stand structure and cavity nesting habitat.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve individual trees (green cull, high defect trees, S. spruce and y. cedar) and feather edges along class III V-notch on the lower setting. Retain green cull and high defect trees around the balance of the unit at a rate of 3-8 per acre. Systems will provide good phenotypic trees for vertical and cavity nesting habitat structure and visual softening of visual impacts. Individual reserves should be green culls, y. cedar or less common Sitka spruce when found. Also during final layout round edges of unit for visual mitigation. Clearcut would not mitigate wildlife and visual concerns. Shelterwood with reserves would not harvest as much timber, and would only be marginally better in providing wildlife habitat and mitigating visual quality concerns. Group selection is operationally difficult and costly in this topographic setting, and does not provide as well for habitat and within-stand vertical structure diversity.

Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

West boundary is Clas-2 stream buffer; east boundary is logical yarding limit. Northern and southern boundaries are logical setting boundaries for alternate future harvest units.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Directional falling away from buffers.
BMP 12.6: Unit boundary maintained at least 100 ft. from Class1 & 2 streams.
BMP 18.1: Reserve trees provide habitat for cavity nesting.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed V-notch area with Sitka alder.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322041 ALTERNATIVE(S): B C D E

ACRES: 79 TOTAL NET MBF: 2470.2 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 139



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322042	MAP:	120	ACRES:	45
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-138
						ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	-	-	-	-	-	-	-	-	-	-
VC-5	26.9	21.0	47%	HC-XC	210-230	65	M	M	L	M	M
VC-6	39.4	12.8	29%	H	120-140	70	M	M	L	H	L
VC-7	56.8	10.8	24%	S	370-320	88	M	M	-	H	L
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		44.6	100%	-	-	72	M	M	Mistletoe	H	L

STAND CHARACTERISTICS

Mosaic of two-storied and even age functional stands in the w. hemlock and Sitka spruce series. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 40% on aspects from SE to E which are bisected by a number of small creeks. The western portion of the unit is bounded by a class II buffers on the main creek as well as several feeder creeks. Overstory ages are 180 to 400 years old with moderate to high defect and significant amounts of conk mistletoe, mechanical/animal damage and some windthrow on upper slopes. The understory is <20%stocked with 20 to 60 year old w. hemlock and Sitka spruce which occur in groups throughout with poor to good vigor. Ground cover is sparse to moderately dense Vaccinium associated with devils club, skunk cabbage and shield fern. Swampy conditions on the northern and northwest portions of the unit. Site is fair to very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running Skyline for all settings. Complex anchors required. Rigging in stream buffer necessary. Unit boundary was modified to avoid unstable areas, fish buffers and conform to logical logging limits. Partial cutting is not feasible. Snag retention constitutes a safety hazard.

Visual Resource Management: VQO Maximum modification. Should meet VQO.

Soils / Geology: No concerns listed in post field comments. North area of original unit had soil concerns but was eliminated during field layout.

Fisheries / Watershed: Four class II tributaries entered the original unit. Bench along side of main creek has several channels that provide excellent habitat. Stream course is buffered at the toe of the slope to protect this habitat. Large buffers protect stream banks from erosion. Buffers are greater than 100 ft.

Wildlife: Habitat suitable for hairy woodpecker, brown creeper, marten and black bear. Recommend leaving live trees and snags to maintain habitat density. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5, 6 &7 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of wildlife concerns by retention between settings lower slopes.
(4) Retain minor amounts of green cull or high defect trees, Sitka spruce along the west line, between settings, for vertical stand structure and cavity nesting habitat. This retention should be compatible with logging systems. Retain some snags in these locations if available and deemed safe for logging crews.
(5) Maintain fish habitat adjacent to unit.
(6) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull, high defect or Sitka spruce) on lower slopes along the west line, between settings and below the 84956 road. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and provide Sitka spruce seed source. Individual reserves should be green culls or less common Sitka spruce when found.
Shelterwood and group selection are not feasible with logging system and not desirable with dwarf mistletoe infection.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

West boundary is class II buffers. East boundary is the extent of logging system capability and Hazard class IV soils. The northern and southern boundaries are class II and III streams

Soil, Water, and Wildlife Conservation:

BMP 13.16: Directional falling away from all stream buffers.
BMP 12.6: Unit boundary maintained at least 100' from class 1 & 2 streams.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of some reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

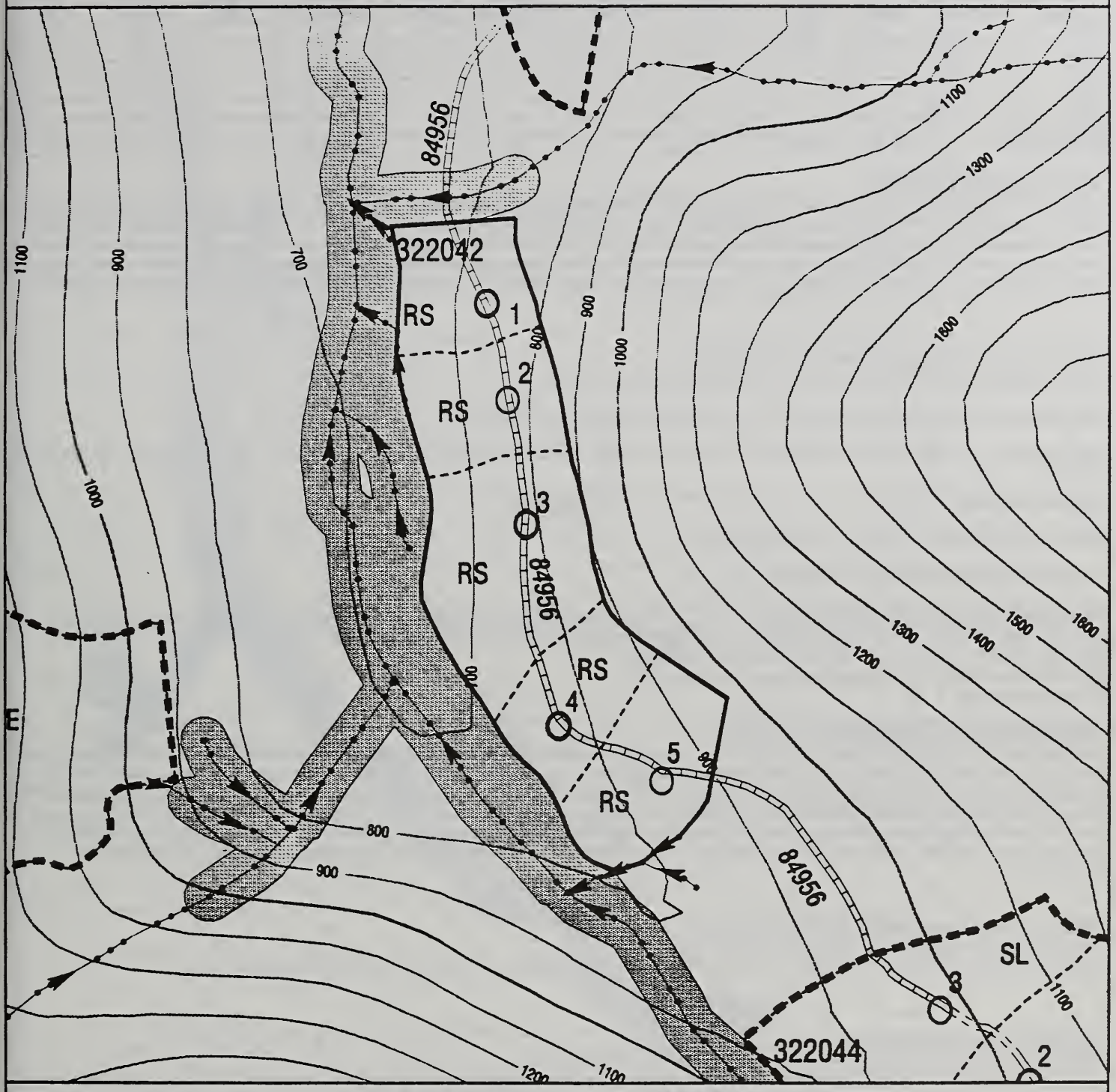
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322042 ALTERNATIVE(S): B D E

ACRES: 44.65 TOTAL NET MBF: 939.9 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 138



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322042H	MAP #:	120	ACRES:	81
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-137
						ALTERNATIVE(S):	B, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	50.7	63%	HC H	210	60	L	M	-	L	L
VC-5	26.9	30.3	37%	H	110	75	M	M	-	M	M
VC-6	39.4	-	-	-	-	-	-	-	-	-	-
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		81.0	100%	-	-	66	L	M	-	L	L

STAND CHARACTERISTICS

Generally even-aged stands in the w. hemlock series. These stands include scattered Sitka spruce and Mt. Hemlock in the overstory. The stand is composed of medium size, high quality sawtimber with moderate amounts of utility pulp. Slopes range from 20 to 50% on aspects from W to SW. Overstory ages are 180 to 200 years old with moderate defect with mechanical/animal damage, defoliators, and windthrow. The understory is typically <20% stocked with 20 to 40 year old W. hemlock and Sitka spruce which occur in groups throughout with poor to good vigor. Ground cover is moderate to dense vaccinium associated with rusty menziesia, and skunk cabbage. Significant new windthrow found throughout the area. Site is fair to good over the unit as a whole. This area is an isolated stand of timber where road construction is not feasible or economically desirable. Much of the area was originally part of unit 322042.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter yard to unit 322042. Expand landing as needed.

Visual Resource Management: VQO Modification. Group selection by helicopter should meet VQO.

Soils / Geology: Soil hazard class III mapped in eastern portion of this area; Hazard Class IV mapped to the north and south of unit; 60% slopes present. No Class IV soils are in unit.

Fisheries / Watershed: No concerns.

Wildlife: Suitable black bear, marten, and brown creeper habitat.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Provide moderate timber volume and value productivity from isolated stands that are predominantly in volume class IV and V.
2) Provide vertical and cavity nesting habitat structure within managed stands.
3) Enhance proportionality by adding significant areas of volume class IV.
4) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Group Selection: Create one to two acre openings removing all trees except occasional Yellow cedar legacy trees as described below. Openings should fit the landscape which in this case is near flat to gentle slope. In areas adjacent to class III streams use the streams as boundaries for some openings. Do not cross a stream with an opening unless multiple forks are involved, then use the largest fork as a boundary. Leave Sitka spruce and yellow cedar on the edge of the openings when found in the area. Avoid leaving trees infected with dwarf mistletoe on the edge of the openings. This scheme will require 4 to 5 entries over 100 years where almost all the timber will be removed from these areas. During the ensuing entries it will be possible to designate patches of reserve trees or reserve areas. These areas should have a significant amount of snags, green culls, young timber or natural thrifty reproduction. This prescription will provide long term vertical habitat, mitigate visual impacts, and assist proportionality.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded to the north and south by class IV soils. Bounded to the east by a ridge top muskeg. Bounded to the west by unit 322042 (Cable unit)

Soil, Water, and Wildlife Conservation:

BMP 13.16: Light impacts of partial harvest with helicopter will retain soils and water quality.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.

MONITORING PLAN

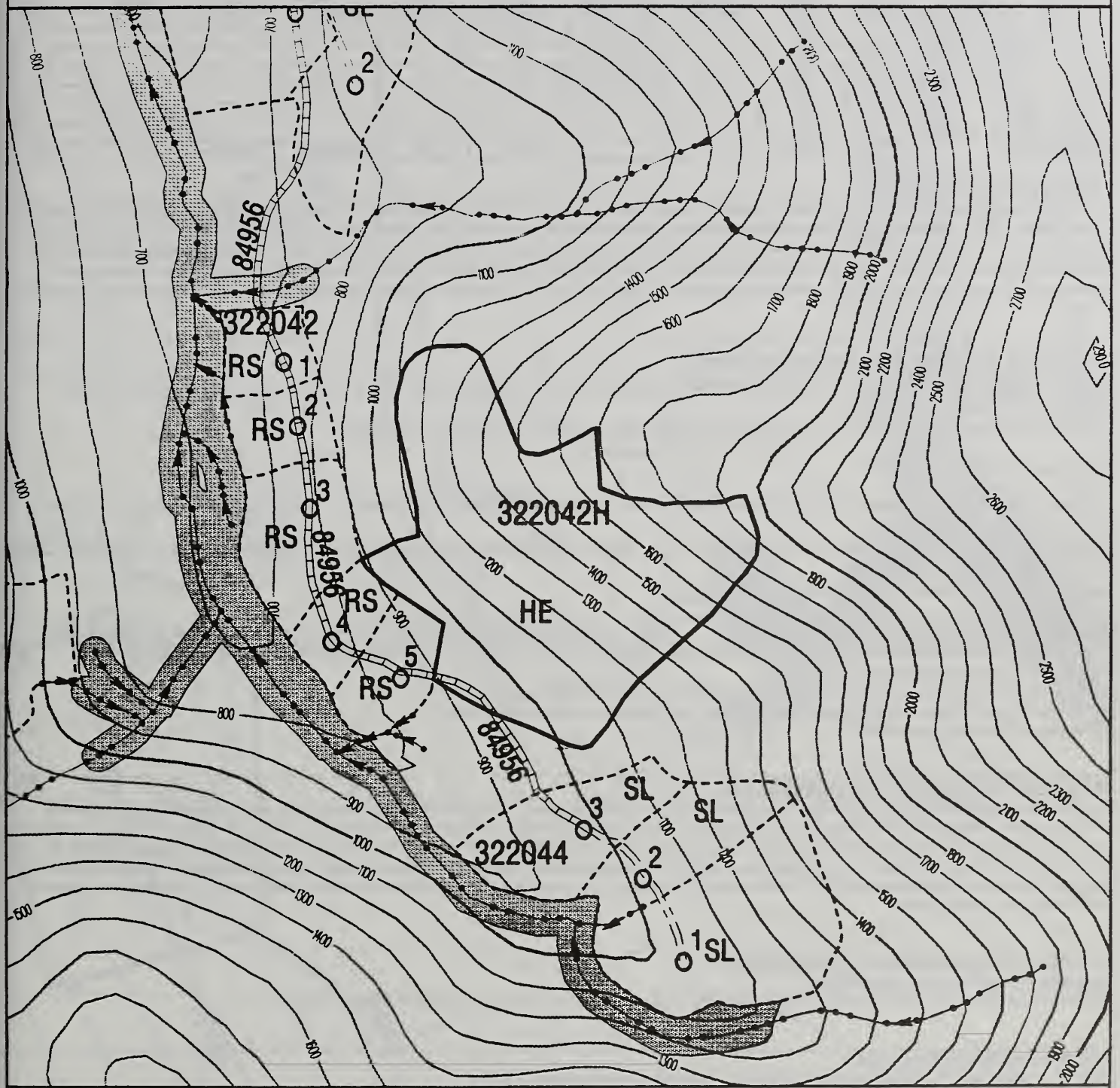
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT(S): 322042H ALTERNATIVE(S): B D

ACRES: 81.10 TOTAL NET MBF: 1318.5 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 138



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322043	MAP #:	127	ACRES:	25
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	25			PHOTO #'S:	888-177
						ALTERNATIVE(S):	B, D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	-	0%	-	-	-	-	-	-	-	-
VC-5	27.0	7.6	30%	H	120-130	55	H	M	L	H	M
VC-6	39.5	17.7	70%	H-HC	120-210	60	M	M	-	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		25.3	100%	-	-	58	M	M	Mistletoe	H	M

STAND CHARACTERISTICS

Mosaic/ two-storied stand in the w. hemlock series. This stand also has Sitka spruce and Y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from10 to 65% on aspects from NE to E. The eastern portion of the unit is bounded by a low site area and a class II stream buffer. Trees are 250 to 350 years old with moderate to high defect and significant amounts of conk, light mistletoe, mechanical/animal damage, defoliators, and pockets of windthrow. The understory is 20-40% stocked with 20 to 50 year old w. hemlock which occur in groups throughout with fair to good vigor. Ground cover is sparse to dense Vaccinium associated with devils club and shield fern. Significant new windthrow found in pockets on upper slopes. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Boundaries modified to exclude low site and buffers and include areas to edge of class Iv soils. Pulp logs should be left for economics. Helicopter yard to landing at unit 322042.

Visual Resource Management: VQO Maximum Modification. Should meet VQO. Unit conforms well to topography.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Appropriate 100' buffer near streams with buffer adjusted for slope. Unit reduced in area and now a helicopter unit due to no location for landing. Good fish habitat present west of unit.

Wildlife: Habitat suitable for red-breasted sapsucker, black bear. Recommend leaving reserve live trees and snags to maintain habitat density. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class ,5 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns with shelterwood method on the upper slopes.
(4) Retain amounts of green cull or high defect trees for vertical stand structure and cavity nesting habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting was selected because: (1) Provides full volume return from a stand that is past its peak productivity.(2) Standing cull trees are reserved to provide vertical structure/habitat/ecological and soil functions. Leaving of cull trees will also add to the economics of the unit since very high cost helicopter will be employed. Clearcut with reserves and shelterwood with reserves would be poorer choices economically and operationally. Blowdown of cull trees will provide mineral soil for germination of S. spruce and y. cedar trees; otherwise, the lack of site prep. in helicopter logging would tend to convert the stand to hemlock. Group selection would not provide vertical structure within stand, and would be in jeopardy of edge raveling and excessive windthrow. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded on the north, south, east and west by hazard class IV soils. Bounded to the west by low site and class II stream buffers.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Retain up to 10 cull logs per acre for nurse logs. Shelterwood provides habitat structure.
BMP 13.5: Helicopter yarding and reserve trees help to mitigate unstable soils.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of some reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning, if desirable, after inspection at year 15. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Nurse logs- up to 10 cull logs retained per acre.

MONITORING PLAN

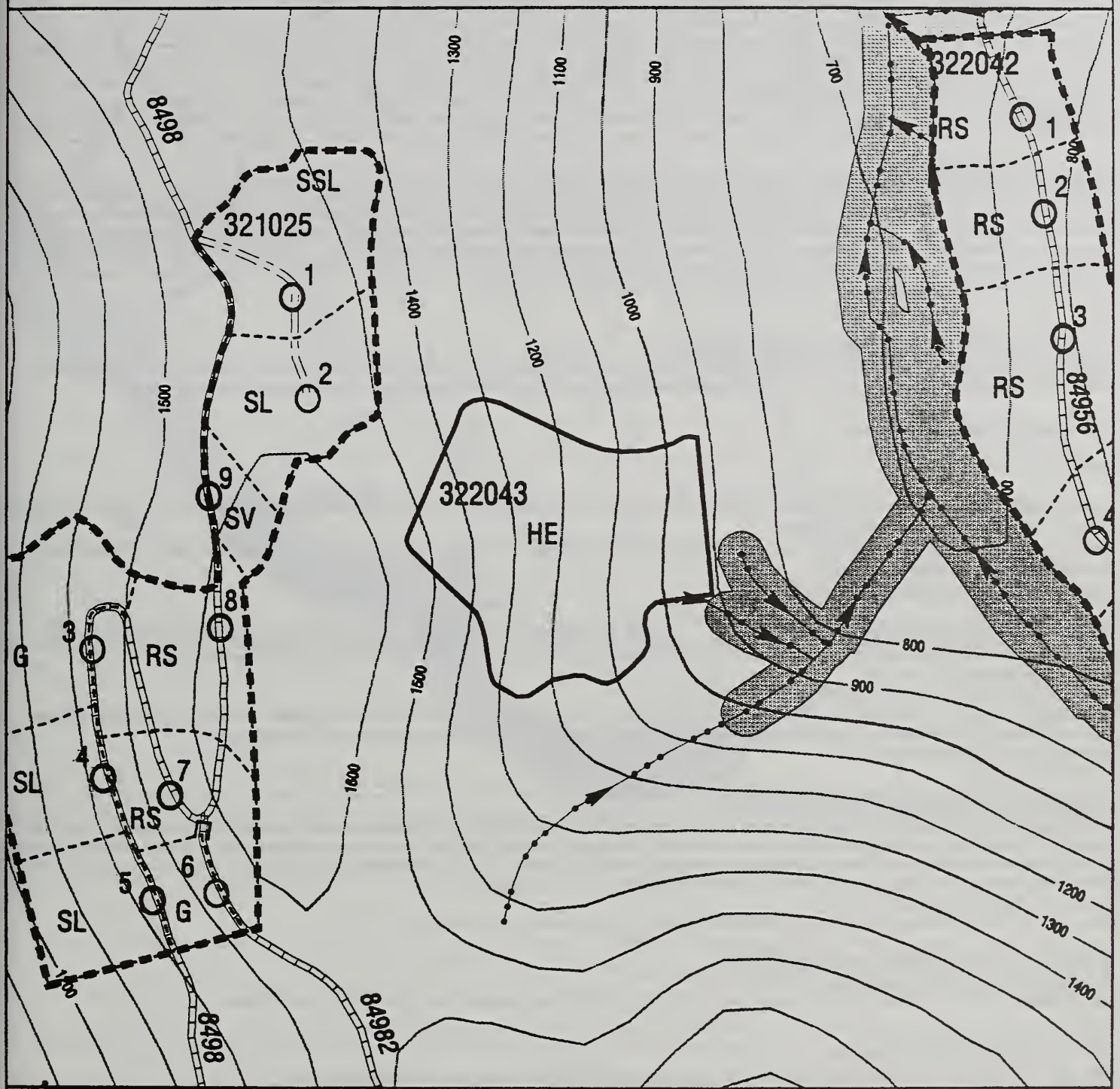
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322043 ALTERNATIVE(S): B D

ACRES: 25.32 TOTAL NET MBF: 786.8 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 25 ROLL NO.: 888 PRINT NO.: 177



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.22:23:51.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322044	MAP #:	133	ACRES:	60
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-137
						ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	0.8	1%	HC	210	45	L	MP	-	M	L
VC-5	26.9	-	0%	-	-	-	-	-	-	-	-
VC-6	39.4	59.0	99%	H-HC	140-210	80	L	M	-	H	M
VC-7	56.8	-	0%	-	-	-	-	-	-	-	-
Low	3.0	-	0%	-	-	-	-	-	-	-	-
Non-Commercial		-	0%	-	-	-	-	-	-	-	-
Unit Attributes		59.8	100%	-	-	80	L	M	-	H	M

STAND CHARACTERISTICS

Mosaic of two-storied and even age functional stands in the w. hemlock and Sitka spruce series. There is also significant amounts of Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 70% on aspects from SE to E which are bisected by a number of small creeks and debris chutes . The southwestern portion of the unit is bounded by a class II buffers on the main creek. Overstory ages are 200 to 400 years old with moderate to high defect and significant amounts of conk, mechanical/animal damage and some windthrow on upper slopes. The understory is <20% - 40%stocked with 20 to 40 year old w. hemlock and Sitka spruce which occur in groups throughout with poor to good vigor. Ground cover is sparse to moderately dense Vaccinium associated with devils club, skunk cabbage, salmonberry and shield fern. Site is very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Slackline system with 90 foot tower. Rigging across SE stream buffer is required. All settings- directionally felled away from the slide chutes bisecting the unit. Split yard away from chutes. Unit reconfigured to avoid class IV soils. Not suitable for partial cut. Snag retention constitutes a hazard.

Visual Resource Management: Not seen.

Soils / Geology: No concerns listed.

Fisheries / Watershed: One class II stream found at the SW boundary- buffered 100'. A wash bisects the unit and is class II adjacent to the south end of unit. Recommend directional falling and split yarding away from class III.

Wildlife: Habitat suitable for hairy woodpecker, brown creeper and black bear. Recommend leaving reserve trees and snags to maintain habitat density. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of wildlife concerns by retention between settings lower slopes.
(4) Retain minor amounts of green cull or high defect trees, Sitka spruce along the southwest line, between settings, for vertical stand structure and cavity nesting habitat. This retention should be compatible with logging systems. Retain some snags in these locations if available and deemed safe for logging crews.
(5) Maintain fish habitat adjacent to unit.
(6) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull, high defect or Sitka spruce) on lower slopes along the west line, between settings and below the 84956 road. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure and provide Sitka spruce seed source. Individual reserves should be green culls or less common Sitka spruce and y. cedar when found. Retention by scalloping the lower portion of the setting boundaries will assist in the stabilization of these areas.
Shelterwood not feasible with logging system.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The majority of the unit was bounded by class IV soils and alder brush fields. The south and southwest boundary is a class II stream buffer.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Split yard away from debris chutes.
BMP 12.7: Seed debris chutes and other sensitive areas with Sitka alder with an intermix of planted Sitka spruce when appropriate.
BMP 12.6: Unit boundary maintained at least 100' from Class-II stream.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of some reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Seed Sitka alder in debris chute areas and interplant Sitka Spruce.
(4) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

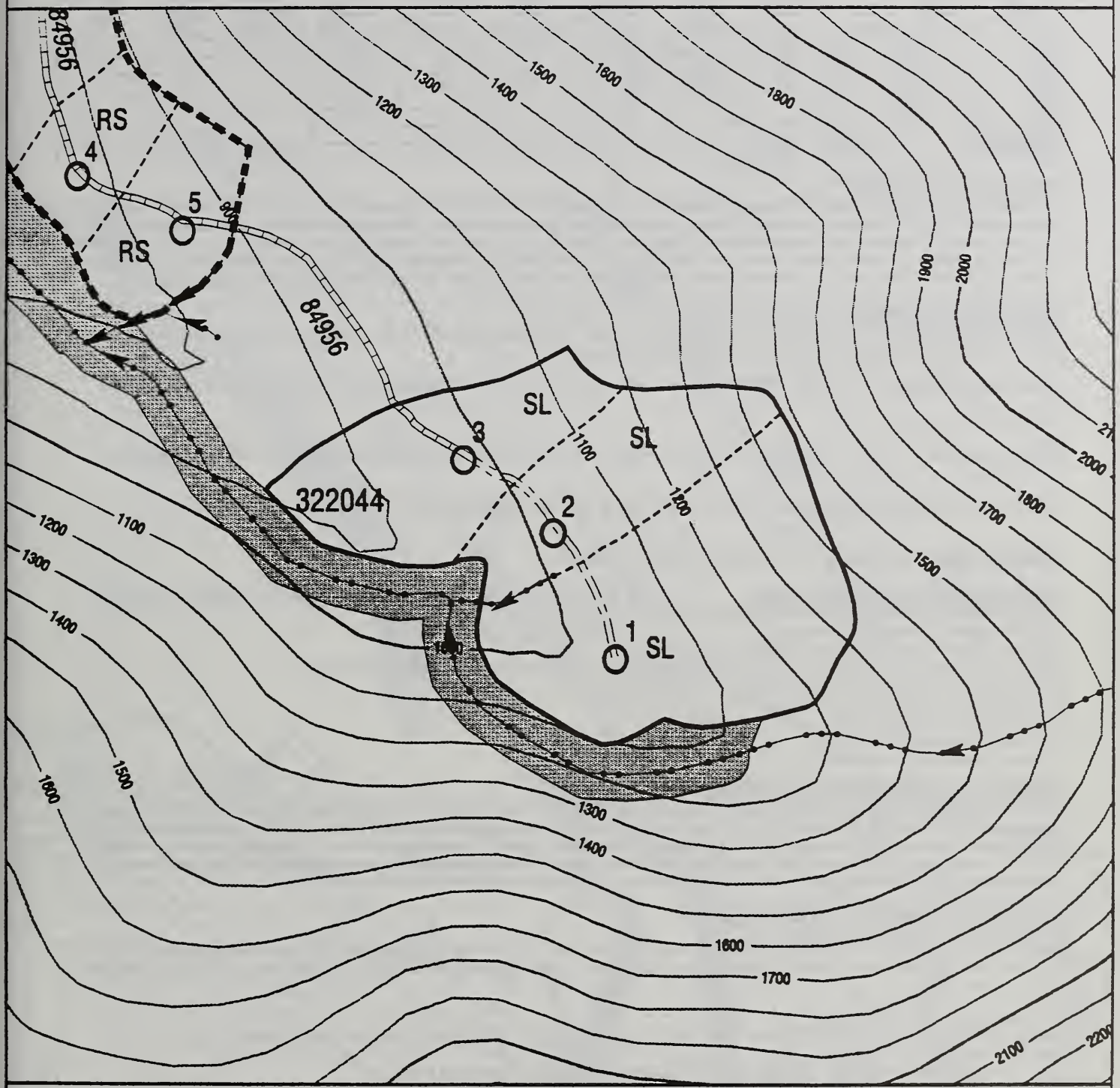
Date	Activity	Standard	Who
Year 3	Stocking survey & reserve tree assessment.	>300TPA	Silviculturist
Year 5	Stocking survey and certification	>300TPA; crown closure	Silviculturist
Year 15	Precommercial Thin Survey	200TPA free to grow	Silviculturist
Year 16-25	Schedule and certify Precomercial thinning	> 200TPA incl.>35 TPA of SS	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT: 322044 ALTERNATIVE(S): B D E

ACRES: 60.46 TOTAL NET MBF: 2026.2 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 137



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

I. UNIT IDENTIFICATION

VCU:	83	UNIT #:	331045	MAP:	62	ACRES:	126
AERIAL PHOTO YEAR:	1987	FLIGHT LINE	51			PHOTO #'S:	684-148
						ALTERNATIVE(S):	B,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	17.9	14%	HC	210	50	L	MP	-	M	L
VC-5	26.4	4.9	4%	WH	110-130	60	M	M	L	H	M
VC-6	37.9	103.4	82%	WH-SS	160-310	65	H	G	L	H	H
VC-7	55.0			-	-	-	-	-		-	-
Low	2.5	-		-	-	-	-	-	-	-	-
Non-Commercial		-		-	-	-	-	-	-	-	-
Unit Attributes		126.2	100%	-	-	60	H	M	mistletoe	H	H

STAND CHARACTERISTICS

Low elevation stand of medium sawtimber in the western hemlock and Sitka spruce series with moderate to high defect in VC 6 and VC 5. VC 4 is WH-YC series in northeastern portion of unit. Sitka spruce is relatively abundant. Stand structure is a mosaic of two-storied , unevenaged, and functionally even-aged with poor to fair distribution and vigor of understory and advanced regeneration. Slopes are moderately steep. Seven Class 3 streams bisect the stand and a Class 2 stream is buffered to the west. Understory is moderate to heavy blueberry with much devil's club and skunk cabbage on the lower slopes. Regeneration potential and potential productivity is high except for low and fair in the VC 4. Mistletoe is present. Good spruce site. Subsistence use, unit size, and mistletoe infection are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Unit designed for a running skyline swing yarder. (2) Heavy partial harvest feasible. (3) Artificial guy anchors and tail trees required for setting #5. (4) Road could be used as a continuous landing but six landings designated.

Visual Resource Management: VQO: Partial Retention; VAC: Moderate. (2) Very visual sensitivity as middleground and background view from small boat route.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) Class 2 stream is southwest stand boundary and excellent fish habitat. (2) Recommend split yarding or full suspension over Class 3 streams in unit.

Wildlife: (1) Recommend retention of green trees and snags for vertical habitat structure and other wildlife values. (2) red breasted sapsucker habitat.

Cultural / Recreation / Subsistence: Unit is sensitive for recreation and subsistence use.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of middleground and background visual impact.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Minimize impact to recreation and subsistence uses.
(7) Provide operational demonstrations of adaptive management trials.
(8) Provide a programmed timber yield.
(9) One end suspension/full suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Selected systems are clearcut, clearcut with reserves, and shelterwood with reserves. The array of evenaged regeneration methods is the recommended alternative because it fits the landscape well , mitigates visual impact, and provides an adaptive management trial of regeneration methods. Reserve trees utilized in the selected alternatives will provide wildlife habitat as well as a source of blowdown for ecological functioning. Other Alternatives: Selection and sanitation salvage are of marginal economics and logging feasibility. The evenaged methods will provide a higher timber yield and better conditions for regeneration and growth. Defer treatment would not provide a timber yield from a unit with relatively high timber value and would not regenerate a stand with high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The southwest boundary follows a TTRA Class 2 stream buffer except for at the bottom of settings 4 and 5 where there is low site forest / muskeg between the unit and the stream. The unit boundary to the northwest leaves a small future unit between 331045 and 332066. The boundary running to the northeast follows the yarding break into low site forest.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - TTRA Class 2 stream buffers, Class 3 's in unit requiring split yard or full suspension
BMP 13.9 Suspended Log Yarding -
BMP 13.16 Stream Channel Protection - split yard or suspend logs over Class 3's bisecting unit; clean out slash.
BMP 13.15: Wetland protection-Unit configured to exclude low site and muskeg.
BMP 18.1: Reserve trees provide cavity nesting habitat.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and blowdown of leave trees
Plant SS and YC to improve productivity.
Schedule PCT and favor SS and YC(where occurs)

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 331045 ALTERNATIVE(S): B D E

ACRES: 126.17 TOTAL NET MBF: 3792 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 148



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

I. UNIT IDENTIFICATION

VCU:	83	UNIT #:	331046	MAP:	82	ACRES:	36
AERIAL PHOTO YEAR:	1987	FLIGHT LINE	50			PHOTO #'S:	684.14
						ALTERNATIVE(S):	B,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	17.9	14%	HC	210	50	L	MP	-	M	L
VC-5	26.4	4.9	4%	WH	110-130	60	M	M	L	H	M
VC-6	37.9	103.4	82%	WH-SS	160-310	65	H	G	L	H	H
VC-7	55.0			-	-	-	-	-		-	-
Low	2.5	-		-	-	-	-	-	-	-	-
Non-Commercial		-		-	-	-	-	-	-	-	-
Unit Attributes		126.2	100%	-	-	60	H	M	mistletoe	H	H

STAND CHARACTERISTICS

Low elevation stand of medium sawtimber in the western hemlock and mixed conifer series. The VC 4 mixed conifer and poorly drained western hemlock is located on the lower slope with VC 6 western hemlock with scattered large Sitka spruce emergents is on the moderately well drained upper slope. Defect is moderate to high. Stand structure is mostly functionally evenaged with a mosaic of younger age classes and regeneration in gaps in the VC 4. Understory is moderate dense blueberry with devil's club in VC 6 and dense blueberry with skunk cabbage in VC 4. Unit is located on a debris fan from oversteepened terrain upslope and large muskeg downslope. One major Class 3 bisects the stand south to north and a Class 1 stream is located about 400 ft west. Advanced regeneration is poor to good but occupies no more than 20% of the stand Overstory age is estimated to be in excess of 400 yrs. Potential productivity is high to fair and regeneration potential is high to fair along the same gradient from well drained upper slopes to the muskeg fringe.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Running skyline required by unit design. (2) Heavy partial harvest is feasible. (3) Tail trees required. (4) Tailholds external to unit.

Visual Resource Management: VQO: Partial retention; VAC: Moderate. (2) Very visually sensitive as seen in middleground and background from small boat route.

Soils / Geology: No concerns.

Fisheries / Watershed: (1) TTRA Class 1 to west of unit.

Wildlife: (1) Recommend retention of green trees and snags for vertical habitat structure and other wildlife values. (2) red breasted sapsucker habitat. (2) Red breasted sapsucker habitat.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Mitigation of middlegrouind and background visual impact.
(4) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(5) Minimize sediment yield to fish bearing streams.
(6) Provide a programmed timber yield.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the recommended alternative because it is the most feasible and efficient method to harvest and regenerate the stand and mitigate visual, wildlife, and watershed impacts as designed. A heavy partial harvest is feasible with minor impact to logging costs and yield. Reserves will provide wildlife habitat as well as a source of blowdown for ecological functioning. Regeneration and subsequent growth will be near that of a clearcut. Clearcut and clearcut with reserves would not povide as much mitigation of visual impacts, ecological/soil function or structural diversity. Logging feasibility , regeneration, and future productivity do not indicate intermediate or unevenage silviculture methods. Defer treatment would not provide a timber yield nor regenerate a stand with moderate to high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The north boundary follows the type change to a muskeg fringe. The west boundary leaves approx. a 400 ft buffer on the Class 1 stream course (a portion of the paper plan unit was deleted in this area). The south boundary is a yarding boundary at the base of over steepened (>70%) terrain. The southeast boundary is a logical setting boundary that leaves a logical future unit between 331046 and 331047.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - TTRA Class 1 stream buffers, large class 3 in unit.
BMP 13.16 Stream Channel Protection--maintaining "no-cut" buffer on Class-III stream.
BMP 18.1: Reserve trees maintain habitat structure.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and blowdown of leave trees.
Plant SS to improve productivity.
Schedule PCT and favor SS and YC(where occurs)

MONITORING PLAN

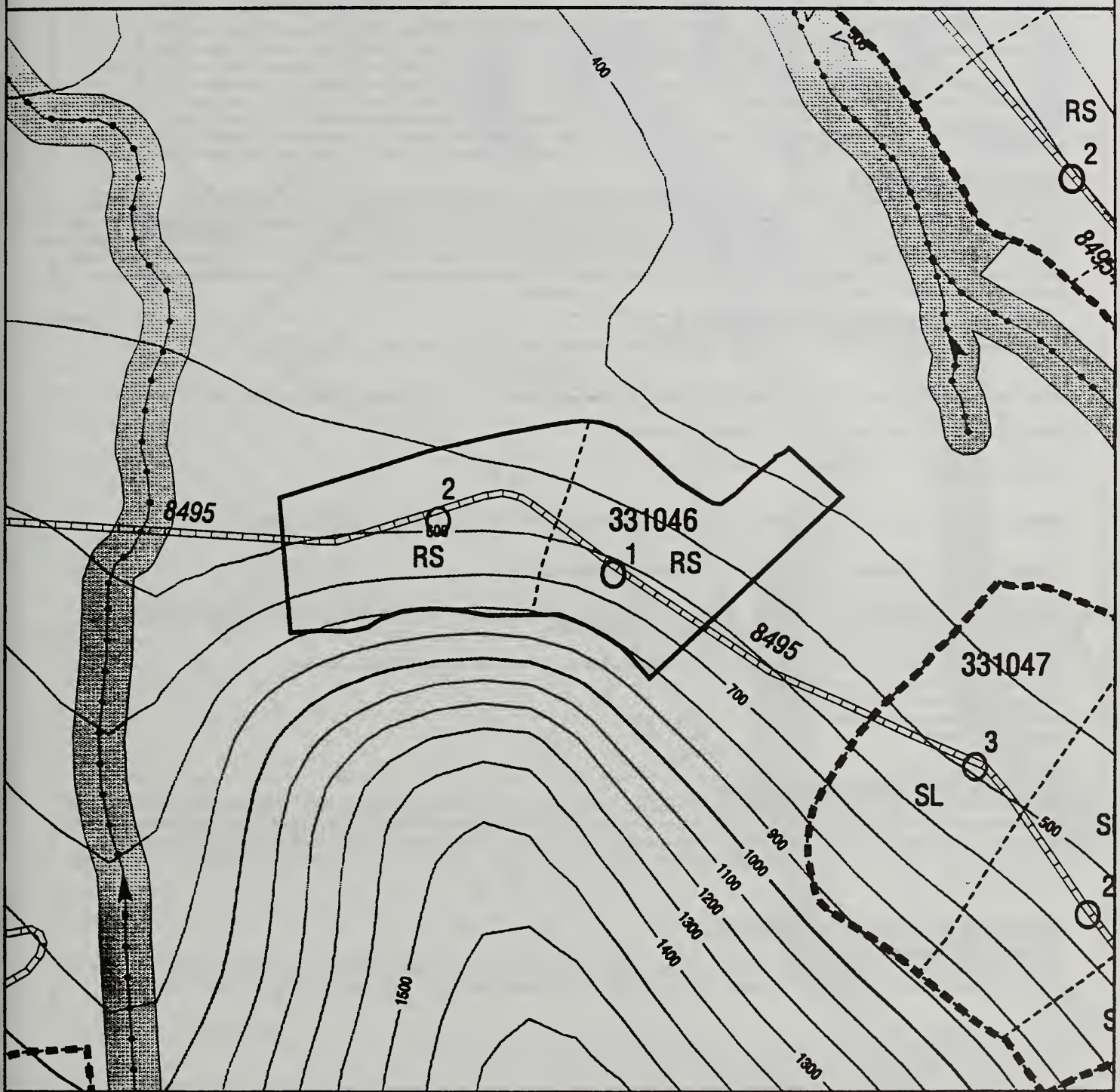
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 331046 ALTERNATIVE(S): B D E

ACRES: 35.67 TOTAL NET MBF: 768.7 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 140



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

I. UNIT IDENTIFICATION

VCU:	83	UNIT #:	331047	MAP:	86	ACRES:	59
AERIAL PHOTO YEAR:	1989	FLIGHT LINE	26			PHOTO #'S:	888-171
						ALTERNATIVE(S):	B,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	9.9	17%	XC	170-420	45	L	MP	-	M	L
VC-5	26.4	27.6	47%	WH	130-140	60	M	M	-	H	M
VC-6	37.9	21.7	37%	WH	130-120	80	H	G	-	H	H
VC-7	55.0			-	-	-	-	-	-	-	-
Low	2.5	-		-	-	-	-	-	-	-	-
Non-Commercial		-		-	-	-	-	-	-	-	-
Unit Attributes		59.2	100%	-	-	60	M	M		H	H

STAND CHARACTERISTICS

Mid to low elevation stand of medium to large sawtimber mostly in the western hemlock series with moderate to high defect. Scattered large and high quality Sitka spruce are present. There is mixed conifer and WH-YC series in the lower unit where the slope flattens and drainage is restricted. Stand structure is functionally even-aged with poor to fair distribution and vigor of understory and advanced regeneration. Slopes are moderate to moderately steep with the toe of a debris torrent from hazard class IV soils upslope crossing the southeast extent of the unit. Two Class 3 streams bisect the stand and a Class 2 stream is buffered to the east. Understory is open blueberry with devil's club and some skunk cabbage in the VC 5 and VC 6 with dense blueberry and abundant skunk cabbage in the VC 4. Regeneration potential and potential productivity is high except for low and fair in the VC 4.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Large slackline required. (2) Partial harvest not feasible because of downhill yarding. (3) Tail trees required.

Visual Resource Management: VQO: Modification; VAC: Moderate. (2) Some visual sensitivity as top of unit viewed in background from small boat route.

Soils / Geology: (1) Hazard Class IV soils but this area is now avoided.

Fisheries / Watershed: (1) TTRA Class 2 on east side of unit.

Wildlife: (1) Recommend retention of green trees and snags for vertical habitat structure and other wildlife values. (2) red breasted sapsucker habitat.

Cultural / Recreation / Subsistence: Unit is sensitive for recreation and subsistence use.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of an overmature stand with a decadent overstory and poor understory.
(2) Improve timber volume and value productivity.
(3) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(4) Minimize sediment yield to fish bearing streams.
(5) Exclude Hazard Class IV soils from the timber base.
(6) Provide a programmed timber yield.
(7) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the recommended alternative because it is the most feasible and efficient method to harvest and regenerate the stand . Logging feasibility is poor for a partial harvest. Regeneration and subsequent growth will be at an optimum with a clearcut vis-a-vis other evenaged methods. Even with clearcutting, some reserve trees will be retained to provide wildlife habitat as well as a source of blowdown for ecological functioning. Stand structure and logging feasibility do not indicate intermediate or unevenage silviculture methods. Defer treatment would not provide a timber yield from a unit with relatively high timber value and would not regenerate a stand with high potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The south boundary follows a debris torrent from oversteepened upper slopes. The southwest boundary is the break into steep Hazard Class IV soils. The northwest boundary is located to leave a logical future unit between 331047 and 331046. The northeast and southeast boundary are a TTRA Class 2 stream buffer.

Soil, Water, and Wildlife Conservation:

BMP 13.3 Designate Water Quality Protection Needs - TTRA Class 2 stream buffers, large class 3 in unit/
BMP 13.9 Suspended Log Yarding - Protect sensitive areas.
BMP 13.5 Protection of Potentially Unstable Areas - Exclude Hazard Class IV soils.
BMP 13.16 Stream Channel Protection - split yard or suspend logs over Class 3 bisecting unit; clean out slash.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance .
Plant SS to improve productivity.
Schedule PCT and favor SS and YC(where occurs)

MONITORING PLAN

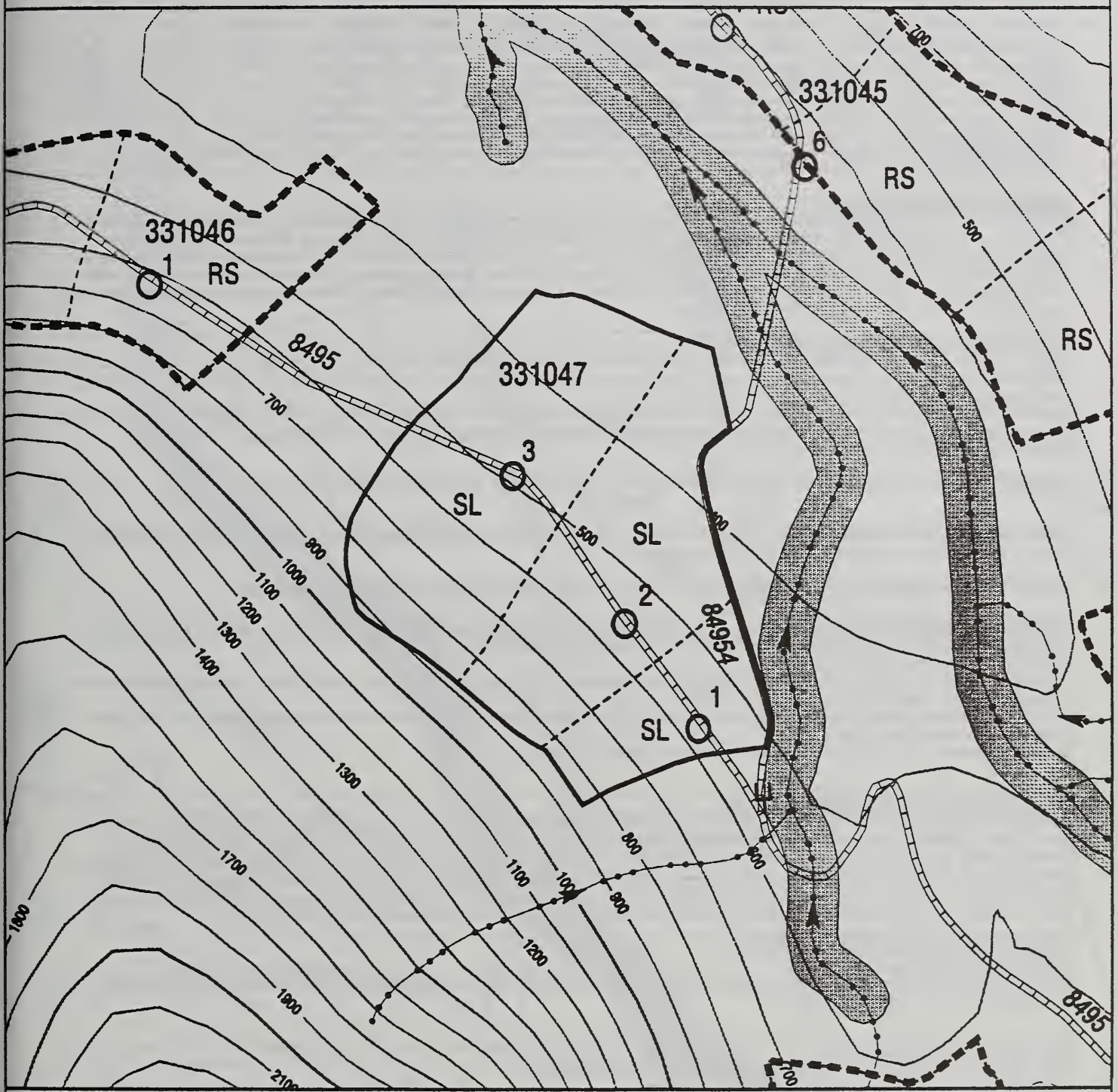
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 331047 ALTERNATIVE(S): B D E

ACRES: 59.19 TOTAL NET MBF: 1486.5 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 26 ROLL NO.: 888 PRINT NO.: 171



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

I. UNIT IDENTIFICATION	VCU:	83	UNIT #:	331048	MAP:	92	ACRES:	50
	AERIAL PHOTO YEAR:	1987	FLIGHT LINE	50			PHOTO #'S:	684-141
								684-142
							ALTERNATIVE(S):	B,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	-	-	-	-	-	-	-	-	-	-
VC-5	27.8	18.5	21%	HC	210 230	55	M	MP		M	L
VC-6	37.6	68.0	79%	H	120	70	H	G		H	M
VC-7	55.0	-		-	-	-	-	-	-	-	-
Low	2.5	-		-	-	-	-	-	-	-	-
Non-Commercial		-		-	-	-	-	-	-	-	-
Unit Attributes		86.5	100%	-	-	67	H	G		H	M

STAND CHARACTERISTICS

Generally mosaic and multiple storied stands in the w. hemlock, w. hemlock/y. cedar and mixed conifer series. These stands include Sitka spruce and Mt. Hemlock in the overstory. The stand is composed of medium to large size, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 90% on aspects from SW to W slopes. The unit is adjacent to ridgetop lowsite/muskeg to the east and class II stream buffer to the west. Overstory ages are 250 to 300 years old with moderate defect and significant amounts of conk, mechanical/animal damage, defoliators, and scattered windthrow. The understory is typically <21%-40 stocked with 20 to 40 year old w. hemlock which occur in groups throughout with fair vigor. Ground cover is moderate to dense Vaccinium associated with skunk cabbage, devils club and shield fern. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Seven settings along two roads. Landings 4,5,&6 designed for running skyline; remainder are small slackline. Tail trees required in the SE unit corner to provide lift over sharp draws. Approx. 18 stations of temporary road required. Snag retention creates safety hazard. Skyline extensions through fish buffer may be needed.

Visual Resource Management: VQO Modification. Viewed from the small boat route in background. This unit meets VQO, but cumulative impacts with adjacent units exceeds modification. This unit is not a significant contributor to cumulative effects because it's oblique to view. Scallop top at settings. Priority 3 on quick list.

Soils / Geology: No concerns listed on post field.

Fisheries / Watershed: Several class II tribs at the NW corner turn to class III at toe of the slope. Recommend split yarding on V- notches.

Wildlife: Survey for northern goshawk- No response. Black Bear observed. Survey for marbled murrelet- low density. Sitka black tailed deer tracks and pellet group observed Recommend leaving reserve trees and snags for habitat structure.

Cultural / Recreation / Subsistence: No concerns on post field comments. However rated for subsistence and recreation use on quick list .

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class 5, 6 & 7 with diseased, mature overstory.
(2)Volume for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention at class II streams and split yarding away from the deep class III V-notch. Rounding of unit corners and minor retention on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the areas adjacent to class II streams for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) Maintain fisheries habitat in adjacent streams. Split yard away from Class III V-notches.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) Provides a reasonably high volume return from a stand that is past its peak productivity. (2) Reserves individual trees to provide ecological functions, wildlife habitats, and visual quality. Systems to provide good phenotypic trees for vertical and cavity nesting habitat structure, softening of visual impacts, and source of blowdown for ecological functioning. Reserves should be green culls or less common species such as Sitka spruce or yellow cedar, when found. Retention of trees and groups of trees between settings will retain about 3 to 4 acres of timber on the upper slopes of the unit above the road and along the deep class III V-notch. Also during final layout round the corners of the unit on the upper slopes. Retain a 50 foot buffer on each side of the deep class III V-notch. In conjunction with that buffer feather the edges around the adjacent small muskeg that has been excluded from the unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northern portion of the unit is bounded by buffers to protect class I & II streams. The east and the west boundaries are determined by logical logging limits. The east boundary is adjacent to an old windthrow area.

Soil, Water, and Wildlife Conservation:

BMP 13.16: As above directional falling and split yarding away from V-notches and buffers.
BMP 13.3: Boundaries maintained at least 100' from Class-II streams.
BMP 18.1: Reserve trees maintain habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Retain patches of trees on upper slopes in scalloped areas between settings, retain Sitka spruce in these areas as much as possible.
(3) Schedule precommercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 331048 ALTERNATIVE(S): B D E

ACRES: 86.33 TOTAL NET MBF: 2714.1 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 149



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

I. UNIT IDENTIFICATION

VCU:	83	UNIT #:	331049	MAP:	112	ACRES:	70
AERIAL PHOTO YEAR:	1987	FLIGHT LINE	50			PHOTO #'S:	684-141
							684-142
						ALTERNATIVE(S):	B

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	7.8	11%	-	115	50	L	MP	L	M	L
VC-5	27.8	7.2	10%	HC	210 230	55	M	M	L	M	L
VC-6	37.6	55.5	79%	H	120	70	H	G	L	H	H
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		70.5	100%	-	-	66	H	G	Mistletoe	H	H

STAND CHARACTERISTICS

Generally mosaic Even age functional stands in the w. hemlock, w. hemlock/y. cedar and mixed conifer series. These stands include Sitka spruce and Mt. Hemlock in the overstory. The stand is composed of medium to large size, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 70% on aspects from SW to NE slopes. The unit is comprised of four settings , two on the west side of the ridge and two on the east side of the ridge. The unit is adjacent to ridgetop lowsite/muskeg which lies on the ridge between the east and west settings Overstory ages are 250 to 300 years old with moderate defect and significant amounts of conk, mechanical/animal damage, defoliators, and scattered windthrow. The understory is typically 20% stocked with 20 to 40 year old w. hemlock which occur in groups throughout with fair vigor. Ground cover is moderate to dense Vaccinium associated with rusty menzesia, skunk cabbage, deer cabbage and shield fern. Site is fair to good over the unit as a whole. A slide exists between the setting on the east portion of the unit, roads have been reconfigured to avoid this area. Some microsites on the western settings in volume class 4 & 5 are low site with deer cabbage as an indicator, however the area as a whole is suitable for timber production.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Small slackline system is recommended. Roads can be extended for future settings. Temp. roads to landings 2 & 3. Roading configuration minimizes logging impacts on ridgetop muskegs and wildlife corridors. Snags retention creates safety hazard.

Visual Resource Management: VQO Modification. Seen from the small boat route in background. East 1/2 is not seen should meet VQO.

Soils / Geology: No concerns listed on postfield. Priority 2

Fisheries / Watershed: Unit configured to avoid streams on the SW end.

Wildlife: Unit configured to avoid streams on the SW end.

Cultural / Recreation / Subsistence: No concerns on post field comments.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class4, 5 & 6 with diseased, mature overstory.
(2)Volume for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention at class II streams.
(4) Retain minor amounts of green cull or high defect trees in the areas adjacent to slide for stability and for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) Maintain fisheries habitat in adjacent streams.
(6) Split yard away from slide area in east settings.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system and not reasonable due to infestation of dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northern portion of the unit is bounded by reserve settings. The southern boundary adjoins muskeg and low site areas. The unit is almost split into two pieces by a ridgetop muskeg. The east and the west boundaries are determined by logical logging limits and a class II buffer to the NW. A slide divides the unit in the eastern portion.

Soil, Water, and Wildlife Conservation:

As above directional falling and split yarding away from slide and buffers.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees. This will break the pit and mound microtopography in the west settings.
(2) Retain patches of trees on upper slopes in scalloped areas between settings, retain Sitka spruce in these areas as much as possible.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

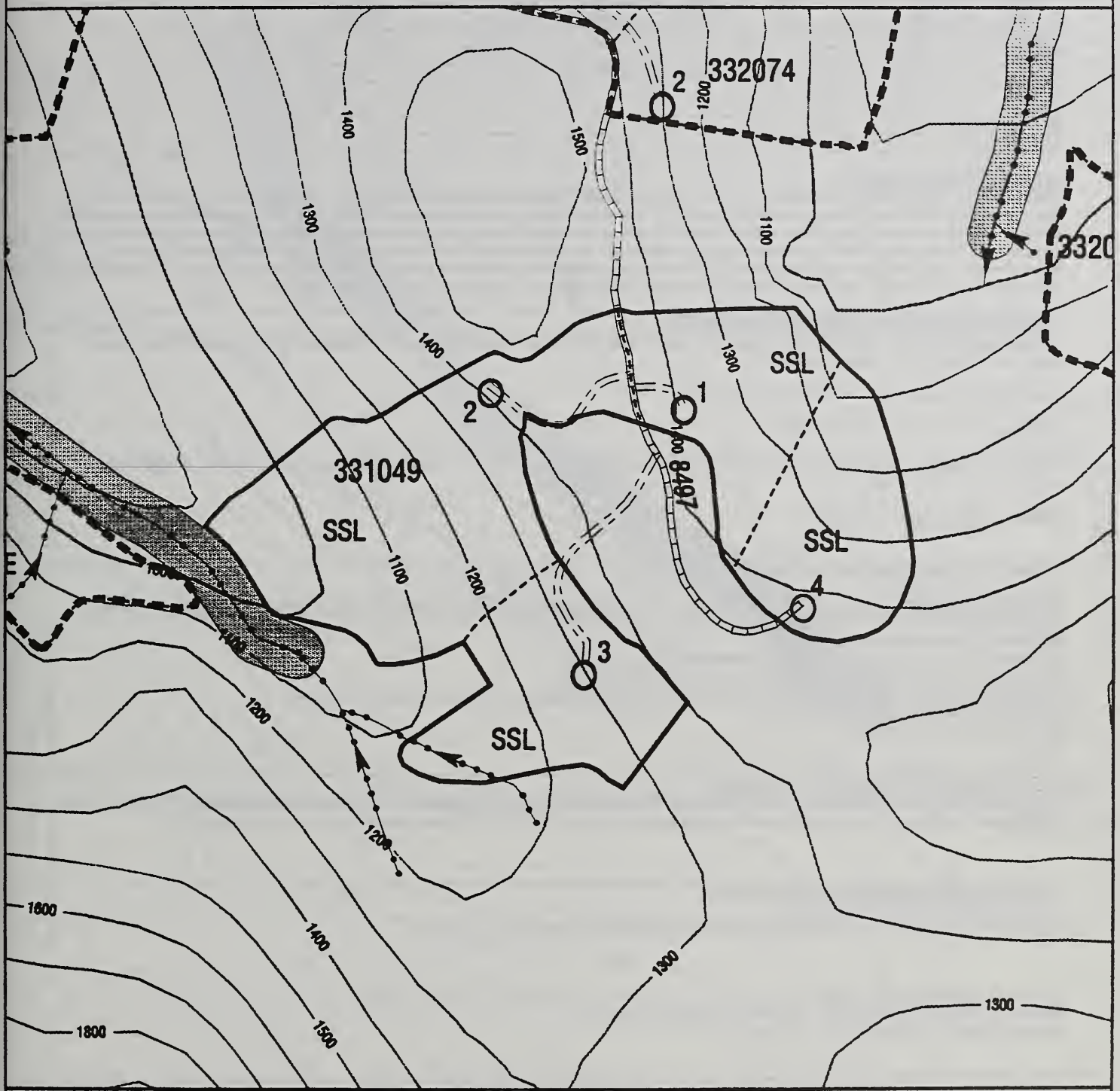
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 331049 ALTERNATIVE(S): B

ACRES: 72.64 TOTAL NET MBF: 2121.1 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 27 ROLL NO.: 888 PRINT NO.: 150



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

I. UNIT IDENTIFICATION

VCU:	83	UNIT #:	331187	MAP:	113	ACRES:	19
AERIAL PHOTO YEAR:	1987	FLIGHT LINE	51			PHOTO #'S:	684-151
						ALTERNATIVE(S):	B,D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	-	-	-	-	-	-	-	-	-	-
VC-5	27.8	-	-	-	-	-	-	-	-	-	-
VC-6	37.6	19.1	100%	H S	120 320	75	M	G	-	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		19.1	100%	-	-	75	M	G	-	H	M

STAND CHARACTERISTICS

Uneven age stand in the w. hemlock and Sitka spruce series. This stand include y. cedar and Mt. Hemlock in the overstory. The stand is composed of medium to large size, high quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 70% on aspects from N to NE slopes. The unit is comprised of one helicopter setting. The unit is adjacent to a class II stream buffer and bisected by one small Class III V- notch creek. Overstory ages are 250 to 400 years old with moderate defect and significant amounts of conk, mechanical/animal damage, defoliators, and scattered windthrow. The understory is typically 20% stocked with 20 to 40 year old w. hemlock which occur in groups throughout with fair vigor. Ground cover is moderate to dense Vaccinium associated with skunk cabbage, devils club and shield fern. Site is good over the unit as a whole. This uneven age stand lends itself to overstory removal or other uneven age management systems.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit will be helicopter yarded. Directionally fell timber away from Class 3 stream. Unit is flagged as 333187 in the field. Snag retention creates safety hazard. Unit is suitable for partial cut.

Visual Resource Management: New unit no comments listed.

Soils / Geology: No concerns listed on postfield.

Fisheries / Watershed: Class II stream which is NE boundary has been buffered 140 feet. Class III V- Notch has been flagged for 100 yards above class II buffer for selective cut. No other concerns.

Wildlife: Leave trees and snags for habitat.

Cultural / Recreation / Subsistence: No concerns on post field comments.

INTEGRATED RESOURCE OBJECTIVES

(Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities)

(1) Open stand in volume class 6 with partially diseased, mature overstory.
(2) Moderate volume for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns with selective harvest methods.
(4) Retain major portion of stand for vertical stand structure and cavity nesting habitat.
(5) Maintain fisheries habitat in adjacent streams with retention in the entire unit as well as along stream buffers and sensitive areas..
(6) Soften visual impacts with retention/partial harvest.
(7) Directional fell away from buffers.

RATIONALE FOR ALTERNATIVE SELECTION

Overstory Removal: Suited for uneven age stands in volume class 6. Also remove minor amounts of understory with mechanical or animal damage. This harvest method is possible with helicopter yarding system and the existing stand structure in this unit. Defer would not capture volume from a stand in transition.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded on the NE by a class II stream buffer and bounded on the SW by sensitive soils areas upslope.

Soil, Water, and Wildlife Conservation:

BMP 13.16: As above directional falling. Helicopter yarding will be low impact.
BMP 18.1: Reserve trees will provide habitat structure.

Forest Productivity Activities:

(1) Release existing understory and maintain a significant amount of overstory. Retain green cull and snags if safe for work crews.
(2) Retain a proportional amount of Sitka spruce and y. cedar in the unit.
(3) Schedule salvage operations in the future as needed. Favor retention of S. spruce and y. cedar when found. Remove trees with dwarf mistletoe if found.

MONITORING PLAN

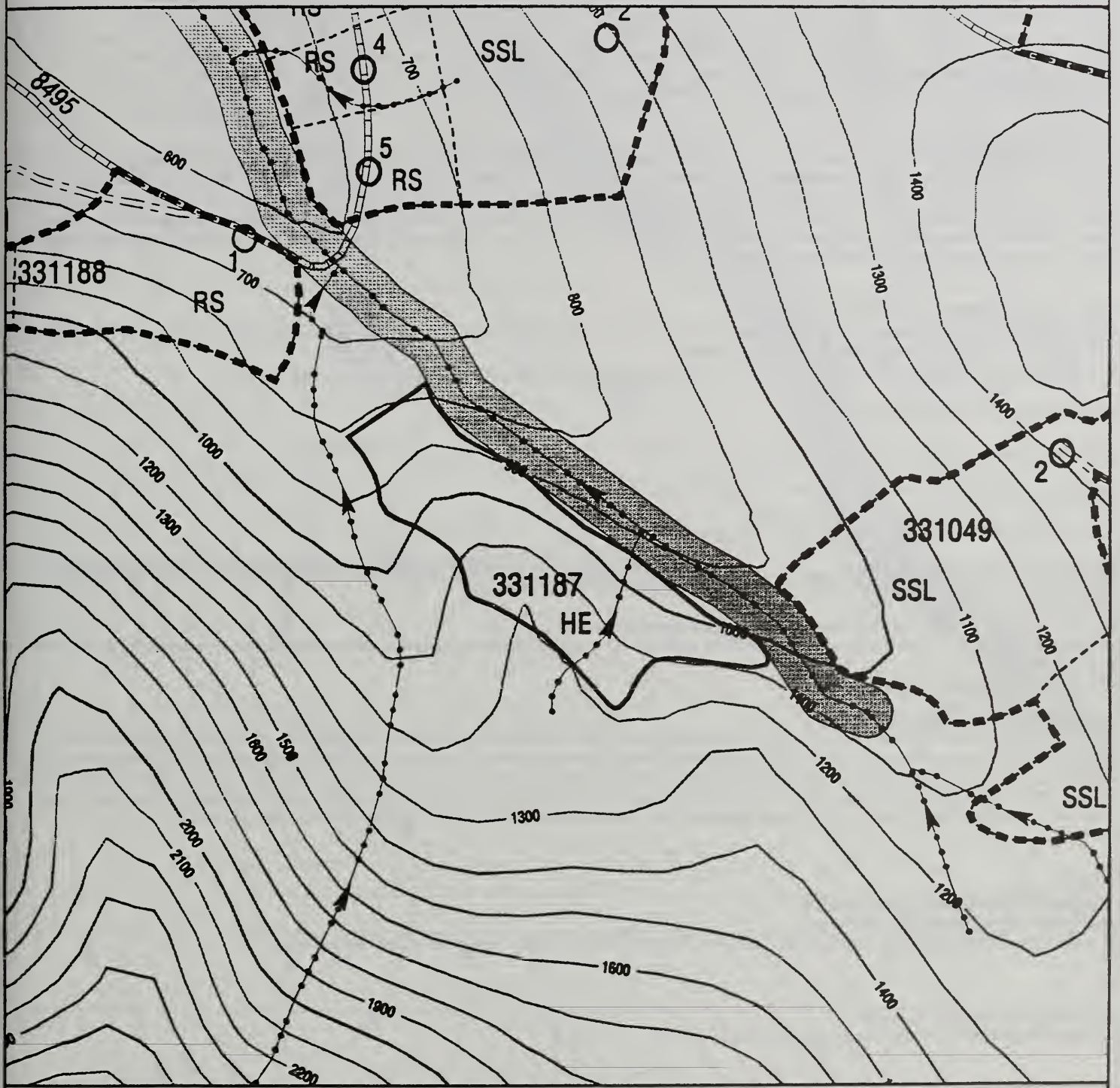
Date	Activity	Standard	Who
3	Reserve tree/stand exam	Stand health ck for windthrow	Silviculturist
5	Stocking exam and Certification	Check for windthrow	Silviculturist
15	Stand exam	Look for salvage/ sanitation opportunities.	Silviculturist
16 TO 25	Schedule next harvest if needed	Remove salvage/sanitation trees.	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 331187 ALTERNATIVE(S): B D

ACRES: 19.06 TOTAL NET MBF: 640.9 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 150



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	331188	ACRES:	37
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51	PHOTO #'S:	684-151
				ALTERNATIVE(S):	B, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	7.0	19%	HC	210	50	L	MP	L	M	L
VC-5	27.8	13.4	36%	H	110	60	M	M	L	H	M
VC-6	37.6	16.6	45%	H S	120 430	75	M	G	-	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**37.0**	**100%**	-	-	**65**	**M**	**M**	Mistletoe	**H**	**M**

STAND CHARACTERISTICS

Uneven age stand in the w. hemlock and Sitka spruce series. This stand include y. cedar and Mt. Hemlock in the overstory. The stand is composed of medium to large size, high quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 70% on aspects from N to NE slopes. The unit is comprised of one helicopter setting. The unit is adjacent to a class II stream buffer. Overstory ages are 250 to 400 years old with moderate defect and significant amounts of conk, mechanical/animal damage, defoliators, and scattered windthrow. The understory is typically 20% stocked with 20 to 40 year old w. hemlock which occur in groups throughout with fair vigor. Ground cover is moderate to dense Vaccinium associated with skunk cabbage, devils club and shield fern. Site is good over the unit as a whole. This uneven age stand lends itself to overstory removal or other uneven age management systems.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running skyline recommended for the two settings. Approx. 13+50 stations of temp. road constructions needed. Unit flagged 333188 in the field. Unit not suitable for partial cut. Snag retention creates safety hazard.

Visual Resource Management: VQO Modification. Seen from the small boat route in background. East 1/2 is not seen should meet VQO.

Soils / Geology: No concerns listed on postfield.

Fisheries / Watershed: Unit configured to avoid streams.

Wildlife: Habitat suitable for black bear 1/2 of unit.

Cultural / Recreation / Subsistence: No concerns on post field comments.

INTEGRATED RESOURCE OBJECTIVES {Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class4, 5 & 6 with diseased, mature overstory.
(2)Volume for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention at class II streams.
(4) Retain minor amounts of green cull or high defect trees in the areas adjacent to slide for stability and for vertical stand structure and cavity nesting habitat. This retention mus logging systems.
(5) Maintain fisheries habitat in adjacent streams.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

In the north the unit is bounded by muskeg and low volume area. The remaining boundaries are determined by logical yarding limits.

Soil, Water, and Wildlife Conservation:

As above directional falling and split yarding away from slide and buffers.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees. This will break the pit and mound microtopography in the west settings.
(2) Retain patches of trees on upper slopes in scalloped areas between settings, retain Sitka spruce in these areas as much as possible.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

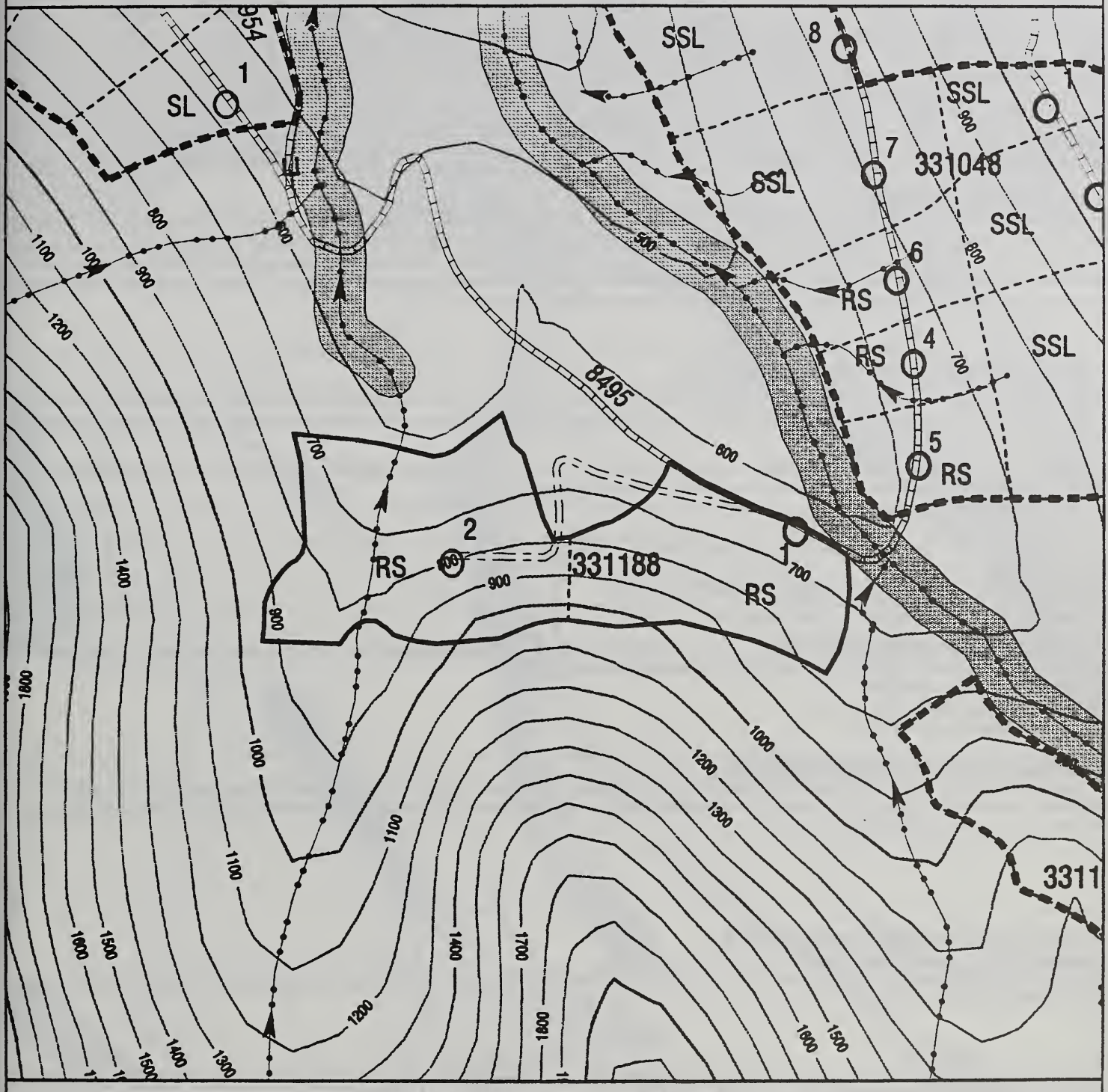
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 331188 ALTERNATIVE(S): B D E

ACRES: 36.87 TOTAL NET MBF: 948 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 150



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

	VCU:	83	UNIT #:	332050	MAP #:	33	ACRES:	7
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-163
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	2	36%	HC	210	50	M	M	M	M	M
VC-5	27.8	4	64%	WH	110-120	60	M	M	L	H	M
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		7	100%	-	-	56	M	M	decline/m'toe	H	M

STAND CHARACTERISTICS

A small-sized, low elevation stand of western hemlock; 2/3 in VC5 and 1/3 in VC4. Primary plant association is western hemlock/blueberry/shield fern. Minor Stika spruce and yellow cedar component. Medium-to-large sawtimber, with average defect in VC4 and low defect in VC5. Some of the western hemlock is lightly infected with dwarf mistletoe. Stand structure is functionally even-aged, with overstory age of about 350 years. Understory vegetation includes blueberry, shield fern, and skunk cabbage. Upper slopes are well-stocked with good quality advance growth. Slopes are gentle to moderate, and soils are moderately well drained within the unit. However, muskeg and low-site forest bog borders the east side of the unit, limiting access. A Class 1 stream flows along the west side of the unit.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running skyline. Western boundary is restricted by Class 1 stream buffer. Access to the east side of the unit is limited by terrain. Snag retention will be safety problem. The unit is not suitable for partial cutting. The main purpose of the unit is to provide a surface rock source for roads. 830 ft. of temporary road required.

Visual Resource Management: VQO is Partial Retention, viewed in the background from the small boat route. Foreground trees should screen the area and minimize impacts. Rock excavation face would impact visual quality unless oriented away from view.

Soils / Geology: No concerns noted.

Fisheries / Watershed: Class 1 stream borders the west side of the unit.

Wildlife: Snags and live reserve trees would provide structural diverse habitat.

Cultural / Recreation / Subsistence: No concerns within unit.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut is the selected alternative. The purpose of harvesting timber on this unit is to clear the site for excavation of a rock source for road building. No reasonable alternative is available if the rock source is to be used. Harvesting the timber from the rock source will not directly meet the integrated resource objectives, but it will support the road building and related activities on other units.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit boundaries have been pulled back from the Class 1 stream on the west and the muskeg on the east. Elsewhere they follow logical yarding limits. The boundaries were not selected for silvicultural reasons.

Soil, Water, and Wildlife Conservation:

No concerns noted.

Forest Productivity Activities:

None. Permanent opening; site conversion.

MONITORING PLAN

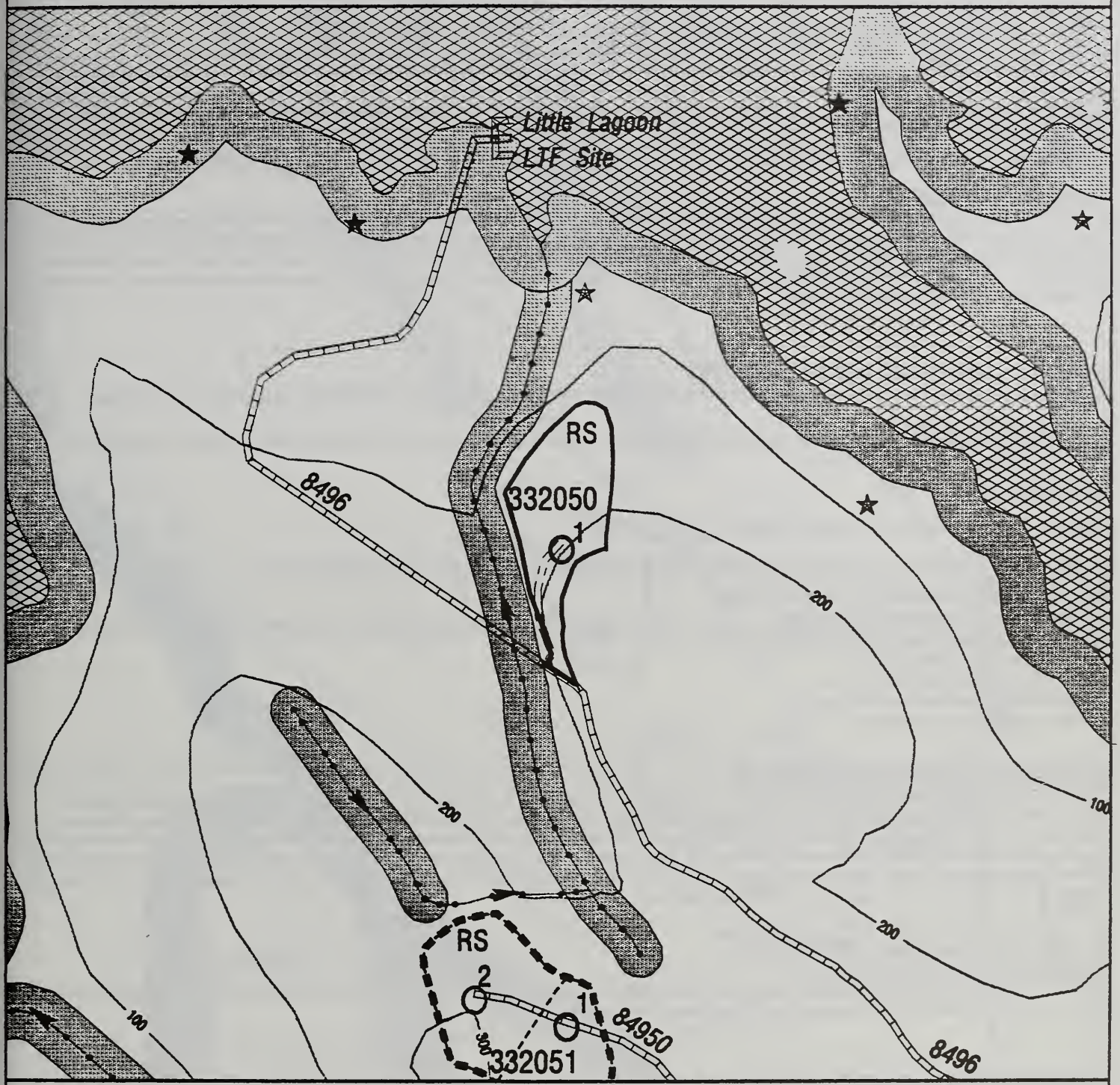
Date	Activity	Standard	Who
Year 1	Ensure that excavations meet safety standards.	From engineering	Sale administrator.

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332050 ALTERNATIVE(S): B C D E

ACRES: 6.7 TOTAL NET MBF: 127.9 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 163



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332051	MAP #:	35	ACRES:	13
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-163
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	13	100%	XC	410-420	45	M	MP	M	M	L
VC-5	27.8	-	-	-	-	-	-	-	-	-	-
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		13	100%	-	-	45	M	MP	cedar decline	M	L

STAND CHARACTERISTICS

A small, open-canopy, functionally even-aged stand on the NE side of a knob facing a narrow inlet above Port Houghton. Slopes are moderate, averaging about 30%. A Class 2/Class 3 stream borders the stand on the north, and the stand grades into muskeg at its lower limits. Plant association varies between mixed conifer/blueberry and mixed conifer/blueberry/skunk cabbage. Productivity in this 300-year old, medium sawtimber stand is low (VC4), with average defect. Species composition includes yellow cedar, western hemlock, and mountain hemlock. Understory shrub cover is dense on the south, becoming more open in the north. Regeneration stocking is sparse. Cedar decline is prevalent in yellow cedar. Soils appear to be stable.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running skyline. Area is suitable for heavy partial cut. Short yarding distances with good deflection. Snag retention is a safety issue.

Visual Resource Management: VQO varies from Modification to Partial Retention. Stand is viewed in the background from the small boat route; it is screened in the foreground by buffer trees and unharvested area.

Soils / Geology: No concerns noted.

Fisheries / Watershed: Class land II streams are buffered.

Wildlife: Recommend retaining reserve trees and snags to maintain structural habitats. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative because: (1) It contributes a high proportion of stand volume to the programmed harvest. (2) Reserve tree selection provides defective hemlock and yellow cedar for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, and visual softening of harvest impacts. Logging systems feasibility is good for a heavy partial cut. Clearcut would provide a somewhat higher timber yield but would not ameliorate the impacts to visual or wildlife habitat resources as well as clearcut with reserves. Shelterwood with reserves, selection, and sanitation salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The northern portion of the unit is bounded by the Class 2/Class 3 stream buffer. The east and southeast part of the stand is bounded by muskeg and low-site transition. The remaining boundaries follow the NW-SE ridgeline, conforming to a logical topographic break.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Unit boundary maintained at least 100 ft. from Class 2 stream.
BMP 13.15: Unit configured to exclude muskeg.
BMP 18.1: Reserve trees provide snag recruitment and habitat structure.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332051 ALTERNATIVE(S): D

ACRES: 12.63 TOTAL NET MBF: 142.4 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 163



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332052	MAP #:	41	ACRES:	14
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-162
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	5	40%	HC	220	45	M	MP	M	L	L
VC-5	27.8	7	54%	HC	210-230	55	M	M	M	M	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	1	7%	XC	420-410	40	L	P	M	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		14	100%	-	-	47	M	MP	cedar decline	L	L

STAND CHARACTERISTICS

A small, functionally even-aged low-elevation stand on a moderate NW slope. Plant association in this 300-year old stand is western hemlock-yellow cedar/blueberry/skunk cabbage. Higher portions of the stand include scattered pockets of western hemlock and yellow cedar in VC4. Stocking is greater on lower slopes, and productivity is higher (VC5). Understory vegetation includes blueberry, rusty menziesia, and skunk cabbage. Muskeg borders the stand on the east, but is not included in the stand. Cedar decline is affecting the yellow cedar. Soils appear to be stable.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is suitable for heavy partial cut. Artificial guyline anchors will be necessary. 117 ft. of temporary road required. Snag retention is a safety issue.

Visual Resource Management: VQO is Modification. Stand is viewed in the background from the small boat route; it is screened in the foreground by buffer trees and unharvested area.

Soils / Geology: No concerns noted.

Fisheries / Watershed: No streams on or bordering the site.

Wildlife: Recommend retaining reserve trees and snags to maintain structural habitats. Clearcut with reserves was adopted for this unit.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative because: (1) It contributes a high proportion of stand volume to the programmed harvest. (2) Reserve tree selection provides defective hemlock and yellow cedar for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, and visual softening of harvest impacts. Logging systems feasibility is good for a heavy partial cut. Clearcut would provide a somewhat higher timber yield but would not ameliorate the impacts to visual or wildlife habitat resources as well as clearcut with reserves. Shelterwood with reserves, selection, and sanitation salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The eastern boundary of the unit has been drawn back from the muskeg to form a more logical boundary that includes productive timberlands. Other boundaries follow timber types and logical harvest settings, while maintaining a buffer from adjacent units.

Soil, Water, and Wildlife Conservation:

BMP 13.15: Unit was configured to exclude muskeg.
BMP 18.1: Reserve trees provide snag recruitment and maintain habitat structure.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332052 ALTERNATIVE(S): D

ACRES: 13.61 TOTAL NET MBF: 241.8 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 162



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:16:43.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332053	MAP #:	37	ACRES:	13
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-163
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	2	16%	WH	130-110	50	L	MP	-	M	L
VC-5	27.8	11	84%	WH	130-120	60	L	M	-	H	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		14	100%	-	-	58	L	M	-	H	L

STAND CHARACTERISTICS

Low elevation stand of w. hemlock series in volume classes 4 & 5 with minor spruce and cedar components. Sawtimber is medium sized with fairly high mortality; defect in VC5 is extremely low, and average in VC4. Stand structure is a mosaic of uneven-aged and functionally even-aged, with overstory age 280-350 years. Slopes are gentle to moderate and rolling, with somewhat poor to moderate soil drainage. Two class 3 streams including one moderate v-notch occur in the unit. Understory is blueberry and rusty menziesia with common skunk cabbage, and better drained areas with shield fern in VC5. Groups of healthy, vigorous WH and spruce regeneration occur in the unit; regeneration potential is moderate to high. Visuals are a moderate concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Cable yarding. Entire unit suitable for heavy partial cut. Directional felling needed adjacent to buffers. One-hundred feet of temporary spur road required.

Visual Resource Management: VQO is Modification. Stand is viewed in the background from the small boat route; it is screened in the foreground by buffer trees and unharvested area.

Soils / Geology: No concerns were noted.

Fisheries / Watershed: Class 2 streams on two sides of unit; buffering required.

Wildlife: Recommend retaining reserve trees and snags to maintain structural habitats. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.
(6) Skyline corridors through stream buffers may be needed.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Class 2 stream buffers form the east and west boundaries of the unit. The north is bounded by the estuary buffer. The south boundary was determined from logical setting layout.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Buffer streams to protect fisheries.
BMP 18.1: Reserve green trees and snags (where safety permits) to provide structural habitat diversity for wildlife.
BMP 13.15: Unit configured to exclude muskeg.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization.

MONITORING PLAN

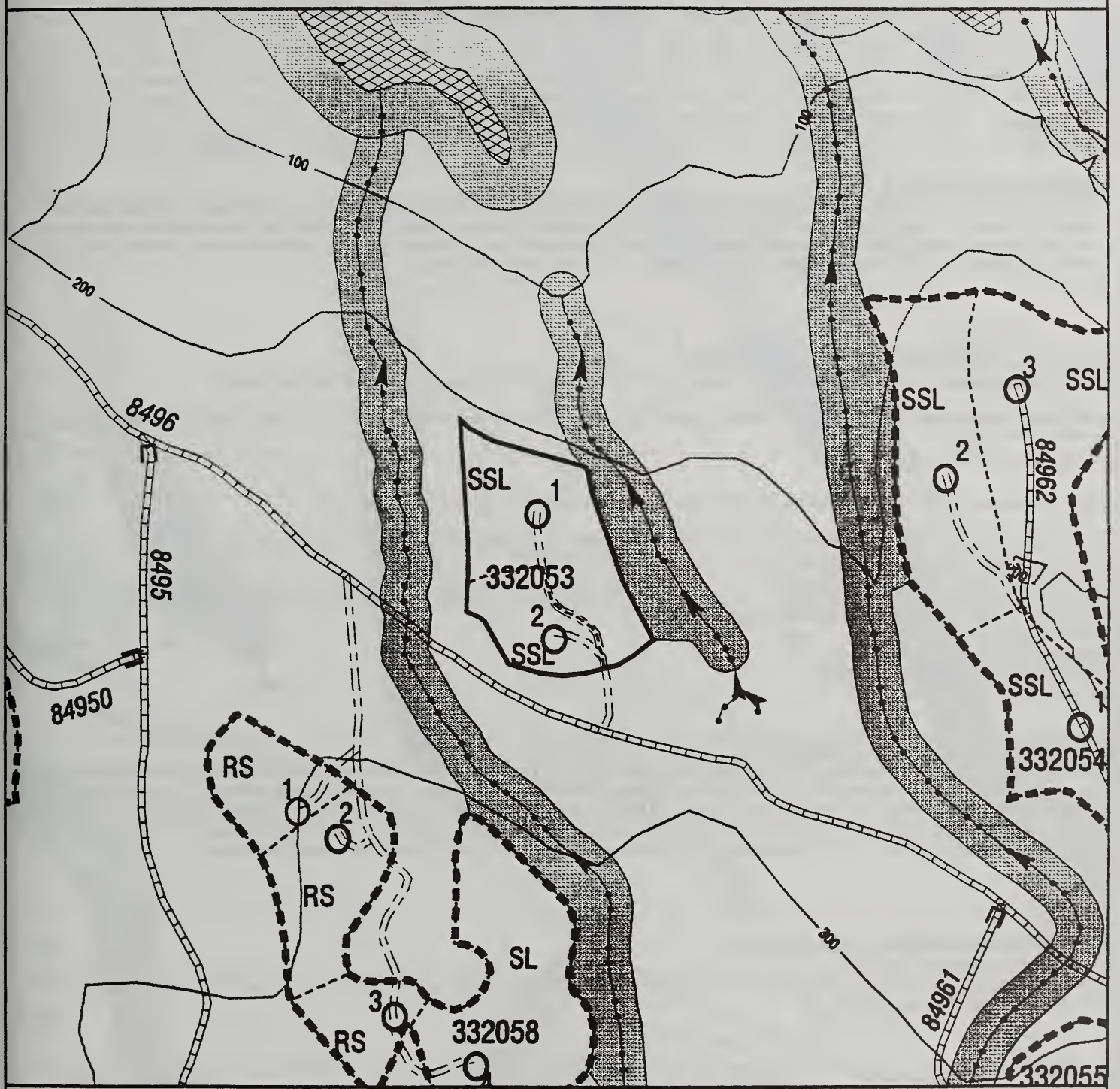
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332053 ALTERNATIVE(S): D E

ACRES: 13.43 TOTAL NET MBF: 289.2 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 163



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332054	MAP #:	36	ACRES:	39
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-171
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	22	55%	XC	420-410	45	M	MP	L	L	L
VC-5	27.8	13	32%	WH	110-130	55	M	MP	L	M	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	5	13%	XC	420-410	40	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		39	100%	-	-	42	M	MP	mistletoe	L	L

STAND CHARACTERISTICS

Lower elevation stand on moderate NW to S slopes. Functionally even-aged, predominantly stocked with western hemlock, with good representation of yellow cedar and scattered dominant spruce. Overstory ages often exceed 350-years. Western hemlock/blueberry plant association. Timber is VC4 and 5, with average defect. Muskeg and low site border much of the stand. Understory is mostly blueberry, with mixture of other shrubs. Poor regeneration, especially in mountain hemlock. Mistletoe infections are common in the hemlock. A Class 2 stream borders the stand to the west. Estuary buffer borders the stand to the north.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Heavy partial cut is feasible on uphill yarded portion. Tail trees may be needed. 500 ft. of temporary road required.

Visual Resource Management: VQO is Modification. Stand is viewed in the background from the small boat route; it is screened in the foreground by buffer trees and unharvested area.

Soils / Geology: No concerns noted.

Fisheries / Watershed: Class 2 stream borders the stand to the west. Larger buffer than 100 ft. placed at this stream.

Wildlife: Recommend retaining reserve trees and snags to maintain structural habitats. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The west boundary follows the buffer of the Class 2 stream. The north boundary is formed by the estuary buffer. Much of the southern and eastern boundaries were due to exclusion of low site and muskeg.

Soil, Water, and Wildlife Conservation:

BMP 12. 6: Buffer streams to protect fisheries.
BMP 18.1: Reserve green trees and snags (where safety permits) to provide structural habitat diversity for wildlife.
BMP 13.15: Unit configured to exclude muskeg.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization. Reduction of dwarf mistletoe-infected portion of stand will increase timber production.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332054 ALTERNATIVE(S): D E

ACRES: 39.05 TOTAL NET MBF: 583.7 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 171



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332055	MAP #:	51	ACRES:	20
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-172
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	18.2	94%	WH	130-120	65	M	MP	L	M	L
VC-5	27.8	-	-	-	-	-	-	-	-	-	-
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	1.1	6%	XC	420-410	45	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		19.3	100%	-	-	61	M	MP	mistletoe	M	L

STAND CHARACTERISTICS

Lower elevation stand on moderate NW to E slopes. Functionally even-aged, predominantly stocked with western hemlock, with good representation of yellow cedar and scattered dominant spruce. Overstory ages often exceed 350-years. Western hemlock/blueberry/skunk cabbage plant association. Timber is VC4 with low defect. Southern and western part of the stand are low site mixed conifer. Understory is mostly blueberry, with mixture of rusty menziesia and skunk cabbage. Understory stocking is about 40%, with variable quality. Mistletoe infections are common in the hemlock.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Heavy partial cut is feasible on uphill yarding portion. Snags are a safety concern. 600 ft. of temporary road required. Artificial anchors may be needed.

Visual Resource Management: VQO is Modification. Stand is viewed in the background from the small boat route; it is screened in the foreground by buffer trees and unharvested area.

Soils / Geology: No concerns noted.

Fisheries / Watershed: Unit borders Class 2 stream on west corner. Greater than 100 ft. buffer was used.

Wildlife: Recommend retaining reserve trees and snags to maintain structural habitats. Shelterwood with reserves was adopted for this unit.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northwest boundary follows the Class 2 stream buffer. Remaining boundaries follow type edges and transition to uneven-aged mosaic condition.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Buffer the Class 2 stream to protect fisheries.
BMP 18.1: Reserve green trees and snags (where safety permits) to provide structural habitat diversity for wildlife.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization. Reduction of dwarf mistletoe will increase timber production.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332055 ALTERNATIVE(S): D E

ACRES: 19.3 TOTAL NET MBF: 207.7 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 172



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332056	MAP #:	46	ACRES:	48
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-172
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	15	31%	WH-HC	130-220	45	L	P	-	M	L
VC-5	27.8	31	65%	WH	110-170	55	L	MP	-	H	M
VC-6	37.6	0	0%	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low -	2.5	2	4%	XC-HC	420-220	40	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		48	100%	-	-	49	CHECK	CHECK	-	CHECK	CHECK

STAND CHARACTERISTICS

Lower to mid elevation stand, 2/3 w. hemlock and w. hemlock-yellow cedar series in VC4 and 1/3 w. hemlock series in VC5; a low-site inclusion contains mixed conifer and hem cedar series. Sawtimber is small in VC4 with extremely low defect and medium in VC5 with high-average defect; mortality is high throughout. Stand structure is a mosaic of uneven-aged and 2-storied with overstory age 300+ years. Lower slopes with VC4 are gentle to moderate with poorly drained soils, upper slopes with VC5 moderate to steep with somewhat poor to moderate soil drainage. Two v-notch creeks and several smaller drainages dissect the slopes; evidence of both stream channel and slope instability is present on upper slopes. Understory is blueberry with common skunk cabbage, and devils club in VC5. Advanced conifer regeneration is light, and mostly WH; regeneration potential is generally high but variable by plant association. Visuals and streamcourse instability are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is not suitable for partial cut. Snags are safety concern. Multiple guyline anchors needed for landing 2.

Visual Resource Management: VQO is Modification as viewed as background from small boat route. Concern with cumulative effects of harvesting multiple units in the area - would result in Maximum Modification unless mitigated.

Soils / Geology: Steepest areas and V-notches show instability.

Fisheries / Watershed: Class 2 stream near north of unit requires buffering.

Wildlife: Recommend retaining reserve trees and snags to maintain structural habitats. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

The selected alternative is clearcutting, best suited to this unit for these reasons: (1) Converts the area to more vigorous young stand. (2) Virtually all of the net available volume will be harvested. (3) Opportunistic retention of leave trees will help to mitigate the visual effects of harvest. (4) Site quality will be maintained. Soil warming will increase decomposition rate and may maintain or increase productivity of the new stand. Note that, although the prescription is clearcutting, there will be opportunities for feathering unit edges, leaving unharvested patches, and scattered reserves to mitigate visual concerns. Other silvicultural methods that would leave substantially more leave trees are not operationally feasible.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Boundaries conform to timber type changes, stream buffers, and harvest system design. Also, the unit was located to meet adjacency objectives and provide for future entry.

Soil, Water, and Wildlife Conservation:

No special concerns or direction.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity.

MONITORING PLAN

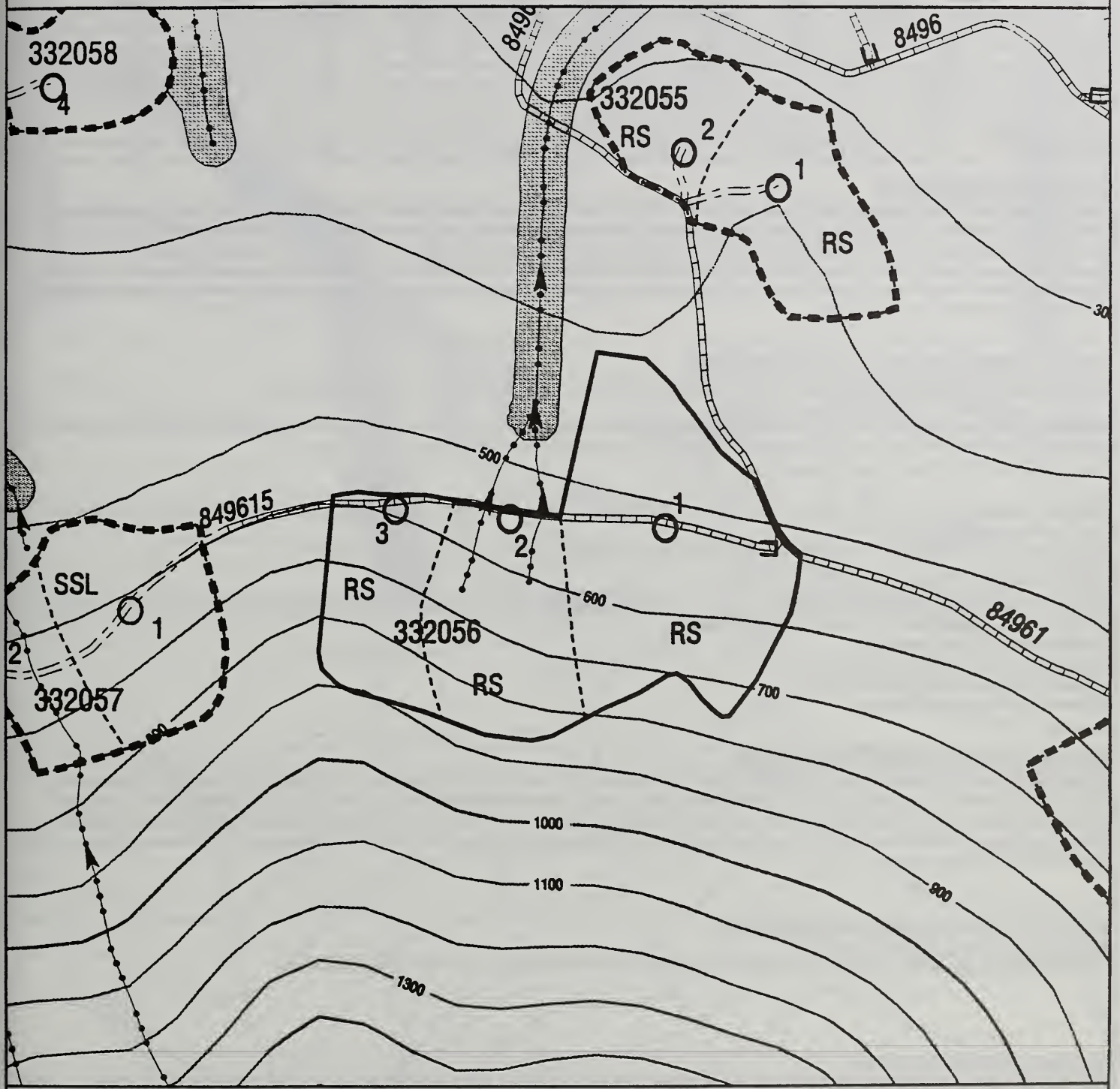
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332056 ALTERNATIVE(S): B C E

ACRES: 47.84 TOTAL NET MBF: 929.8 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 172



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332057	MAP #:	64	ACRES:	23
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-160
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	5	21%	HC	220-230	45	M	MP	-	M	M
VC-5	27.8	16	71%	HC	220-230	55	M	MP	-	M	H
VC-6	37.6	2	8%	HC-WH	210-110	60	M	M	-	H	H
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		23	100%	-	-	53	M	MP	-	M	H

STAND CHARACTERISTICS

Lower to mid elevation stand of western hemlock-yellow cedar series in VC 4, 5, and 6, with some western hemlock series mixed into VC6 on upper slopes. Sawtimber is medium to large, with low-average and average defect; mortality is average with snags scattered throughout the unit. Stand structure is functionally even-aged, with overstory age 250+ years. Slopes are generally moderate, dissected by three moderately large Class 3 streams with extremely steep channel sideslopes prone to instability. Soil drainage is moderately poor throughout except moderate in VC6. Understory is blueberry and rusty menziesia, with abundant skunk cabbage in VC4 and VC5 and devil's club in and around riparian slopes. Some advanced conifer regeneration appears throughout VC5, sparse elsewhere; regeneration potential is moderate. Visuals and stream channel protection are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area not suitable for partial cutting. Snags are a safety concern. Skyline may need to be strung into buffer.

Visual Resource Management: VQO is Modification, viewed in the background from the small boat route. Concern for cumulative impacts of harvest of multiple units. Could mitigate by leaving green culls, shaping unit with scalloped or rounded top, or dropping or reducing size of unit.

Soils / Geology: Slope failure on V-notch in center of unit.

Fisheries / Watershed: Deep V-notches in center and west of unit dictate split yarding or full suspension. Setting boundaries established to accomplish this objective. Larger buffers placed along stream banks.

Wildlife: Retention of green trees and snags would benefit vertical structure and habitat.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

The selected alternative is clearcutting, best suited to this unit for these reasons: (1) Converts the area to more vigorous young stand. (2) Virtually all of the net available volume will be harvested. (3) Opportunistic retention of leave trees will help to mitigate the visual effects of harvest. (4) Site quality will be maintained. Soil warming will increase decomposition rate and may maintain or increase productivity of the new stand. Note that, although the prescription is clearcutting, there will be opportunities for feathering unit edges, leaving unharvested patches, and scattered reserves to mitigate visual concerns. Other silvicultural methods that would leave substantially more leave trees are not operationally feasible.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Stream buffer forms the western boundary. Remaining boundaries conform to timber types, logical yarding limits, and Class 4 soils.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Buffer the Class 2 stream to protect fisheries. Reserve green trees and snags (where safety permits) to provide structural habitat diversity for wildlife.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization. Reduction of dwarf mistletoe will increase timber production.

MONITORING PLAN

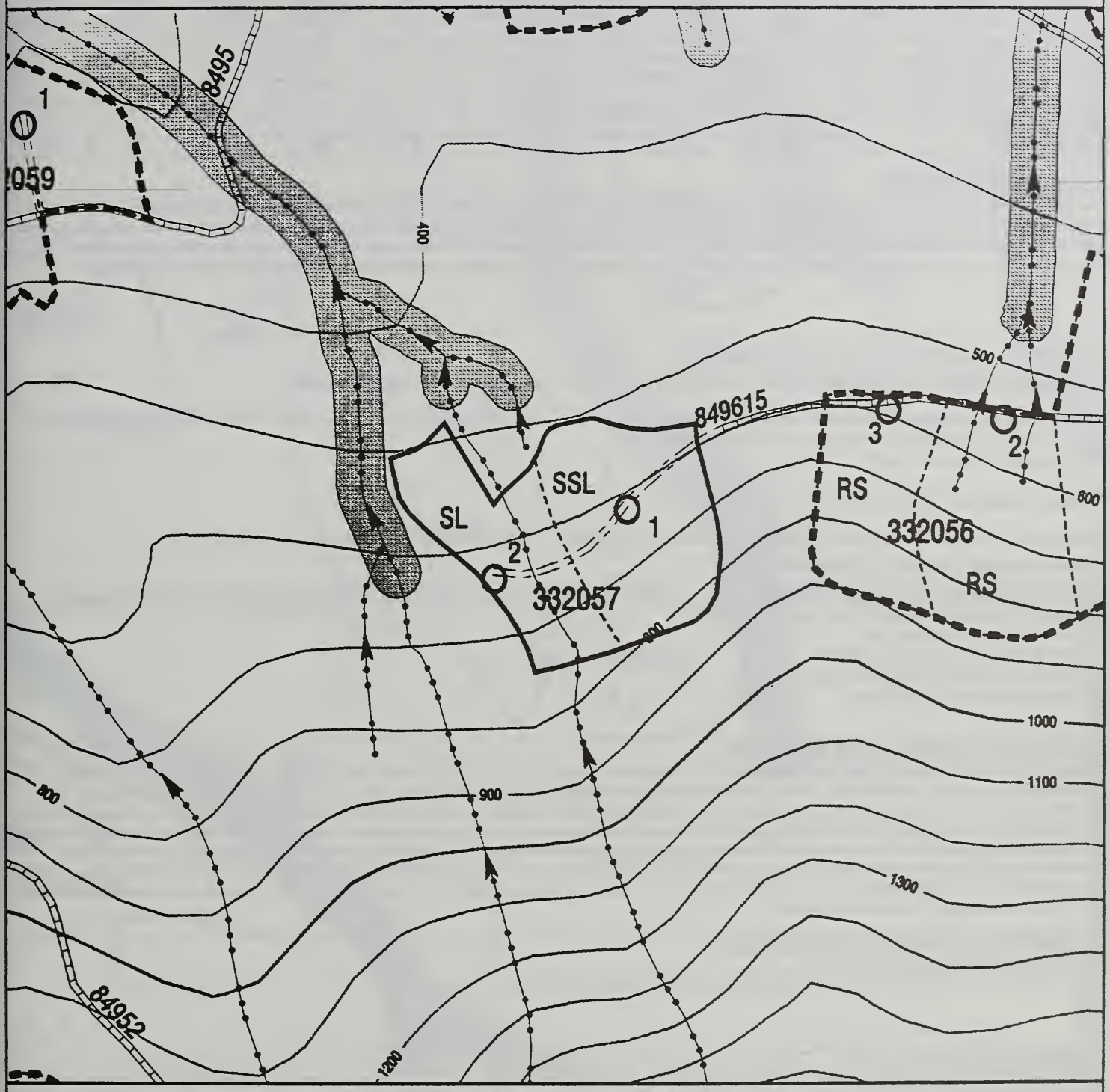
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332057 ALTERNATIVE(S): E

ACRES: 22.92 TOTAL NET MBF: 498.1 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 160



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:49:43.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332058	MAP #:	49	ACRES:	30
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-162
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	23	76%	HC-XC	220-230	45	L	MP	M	M	L
VC-5	27.8	-	-	-	-	-	-	-	-	-	-
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	7	24%	XC-HC	491-230	40	L	P	L	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		30	100%	-	-	34	L	MP	mistletoe	M	L

STAND CHARACTERISTICS

Low elevation stand of w. hemlock-yellow cedar and mixed conifer series in low-productivity volume class 4 and extensive inclusions of low-site volume stands. Sawtimber is medium sized with high defect and mortality. Stand structure is uneven-aged with overstory age 250+ years. Slopes are gentle to moderate with somewhat poor to poor soil drainage. Understory is blueberry and rusty menziesia with abundant skunk cabbage, with copperbrush, deer cabbage, and labrador tea occurring in low-site areas. Only occasional viable regeneration is present, though of mixed species composition; regeneration potential is moderate to low. Mistletoe is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Suitable for heavy partial cut. Snags are a safety concern. One-half mile of temporary road required.

Visual Resource Management: VQO is Modification. Stand is viewed in the background from the small boat route; it is screened in the foreground by buffer trees and unharvested area. Shape of area should appear as natural opening.

Soils / Geology: No concerns noted.

Fisheries / Watershed: Class 2 stream on NE border requires buffer.

Wildlife: Retention of green trees and snags would benefit vertical structure and habitat. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative because: (1) It contributes a high proportion of stand volume to the programmed harvest. (2) Reserve tree selection provides defective trees for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, and visual softening of harvest impacts. (3) Reserves provide a source of blowdown and related soil/ecological functions, as well as favorable microsites for spruce regneration. (4) Logging systems feasibility is good for a heavy partial cut. (5) Modification of the shelterwood pattern (resembling group shelterwood) will allow removal of dwarf mistletoe concentrations. (6) Sanitation/salvage of lower site and transition areas is integrated into the prescription, and will provide capture of volume and value otherwise lost, mostly in high-value yellow-cedar. Other Alternatives: Clearcut and clearcut with reserves would not meet other resource objectives as well. Group selection is of questionable engineering feasibility without shifting to helicopter yarding, has poorer economics, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The northeast boundary borders a Class 2 stream buffer. Other boundaries follow transitions to low site and muskeg.

Soil, Water, and Wildlife Conservation:

BMP 12.6 Buffer the Class 2 stream to protect fisheries.
BMP 18.1: Reserve green trees and snags (where safety permits) to provide structural habitat diversity for wildlife.
BMP 13.15: Unit was configured to exclude muskegs.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization. Reduction of dwarf mistletoe will increase timber production.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332058 ALTERNATIVE(S): D E

ACRES: 29.2 TOTAL NET MBF: 287 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 162



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:20:54.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332059	MAP #:	52	ACRES:	29
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	27			PHOTO #'S:	888-148
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	-	-	-	-	-	-	-	-	-	-
VC-5	27.8	29	100%	WH-HC	110-230	60	L	M	M	H	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		29	100%	-	-	60	L	M	mistletoe	H	L

STAND CHARACTERISTICS

Low elevation stand of w. hemlock and w. hemlock-yellow cedar series in volume class 5, both with a significant spruce component; sawtimber is medium to large with relatively high defect and very high mortality. Stand structure is a mosaic of 2-storied and uneven, with overstory age 250+ years. Slopes are gentle to moderate with a single class 3 v-notch stream; soil drainage is moderate to moderately poor. Understory is blueberry and rusty menziesia with common skunk cabbage. Advanced conifer regeneration occupies 20-40% understory cover, but has only fair to poor vigor and form with moderate mistletoe infection; regeneration potential is generally high except on microsites with poor drainage. Mistletoe is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area not suitable for partial cutting. Snags are a safety concern.

Visual Resource Management: VQO is Modification, viewed as background from small boat route. Shape of unit and location should screen from view.

Soils / Geology: No concerns identified.

Fisheries / Watershed: Class 2 streams on east and west require buffering.

Wildlife: Recommend retaining reserve trees and snags to maintain structural habitats. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

A combination of clearcut and clearcut with reserves is the selected alternative because: (1) It contributes a high proportion of stand volume to the programmed harvest. (2) Reserve tree selection provides defective hemlock, spruce, and yellow cedar for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, and visual softening of harvest impacts. Logging systems feasibility is good for a heavy partial cut. Clearcutting in portions of the stand will provide higher timber yield, sanitation of mistletoe infected areas, and direct contrast with an alternative method (potential for adaptive management). Shelterwood with reserves, selection, and sanitation salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The west and northeast sides of the unit follow the buffer of the two Class 2 streams. The north and south boundaries conform logical yarding limits and timber types.

Soil, Water, and Wildlife Conservation:

Buffer the Class 2 stream to protect fisheries. Reserve green trees and snags (where safety permits) to provide structural habitat diversity for wildlife.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization. Reduction of dwarf mistletoe will increase timber production.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332059 ALTERNATIVE(S): B D E

ACRES: 29.4 TOTAL NET MBF: 687.9 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 27 ROLL NO.: 888 PRINT NO.: 148



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332060	MAP #:	43	ACRES:	36
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	27			PHOTO #'S:	888-148
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	24	68%	XC	410-420	50	M	MP	-	M	L
VC-5	27.8	12	32%	WH	130-115	65	M	M	-	M	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		36	100%	-	-	55	M	MP	-	M	L

STAND CHARACTERISTICS

Low elevation stand, 2/3 mixed conifer series in VC4 and 1/3 w. hemlock series in VC5. Sawtimber is small in VC4 with low-average mortality and large in VC5 with high mortality; defect is relatively low throughout. Stand structure is 2-storied in VC4 and uneven-aged in VC5, with overstory age 250-350 years. Slopes are very gentle and rolling with poor to moderate soil drainage by plant association. Three minor class 3 drainages occur in the unit. Understory is blueberry and rusty menziesia with skunk cabbage common throughout. Advanced regeneration occurs in relatively thrifty patches under canopy gaps created by windthrow; regeneration potential is moderate.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit not suitable for partial cutting. Snag retention would be a safety hazard. Tailholds in or across stream buffers will be required.

Visual Resource Management: VQO is Modification as viewed in the background from small boat route. Trees in foreground would screen view from the water.

Soils / Geology: No special concerns were noted.

Fisheries / Watershed: Class 2 streams bordering the stand on the east and west require buffering.

Wildlife: Reserving green trees and snags would maintain vertical structural habitats. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

The selected alternative is clearcutting, best suited to this unit for these reasons: (1) Converts the area to more vigorous young stand. (2) Virtually all of the net available volume will be harvested. (3) Opportunistic retention of leave trees will help to mitigate the visual effects of harvest. (4) Site quality will be maintained. Soil warming will increase decomposition rate and may maintain or increase productivity of the new stand. Note that, although the prescription is clearcutting, there will be opportunities for feathering unit edges, leaving unharvested patches, and scattered reserves to mitigate visual concerns. Other silvicultural methods that would leave substantially more leave trees are not operationally feasible.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The buffers adjacent to the Class 2 streams form the east and west unit boundaries. On the south, the unit boundary conforms to a transition to a low site area. Remaining boundaries conform to logical harvest system layout.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Buffer the two streams to protect fisheries.
BMP 18.1: Consistent with harvest system requirements, reserve green trees and snags (where safety permits) to provide structural habitat diversity for wildlife.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity.

MONITORING PLAN

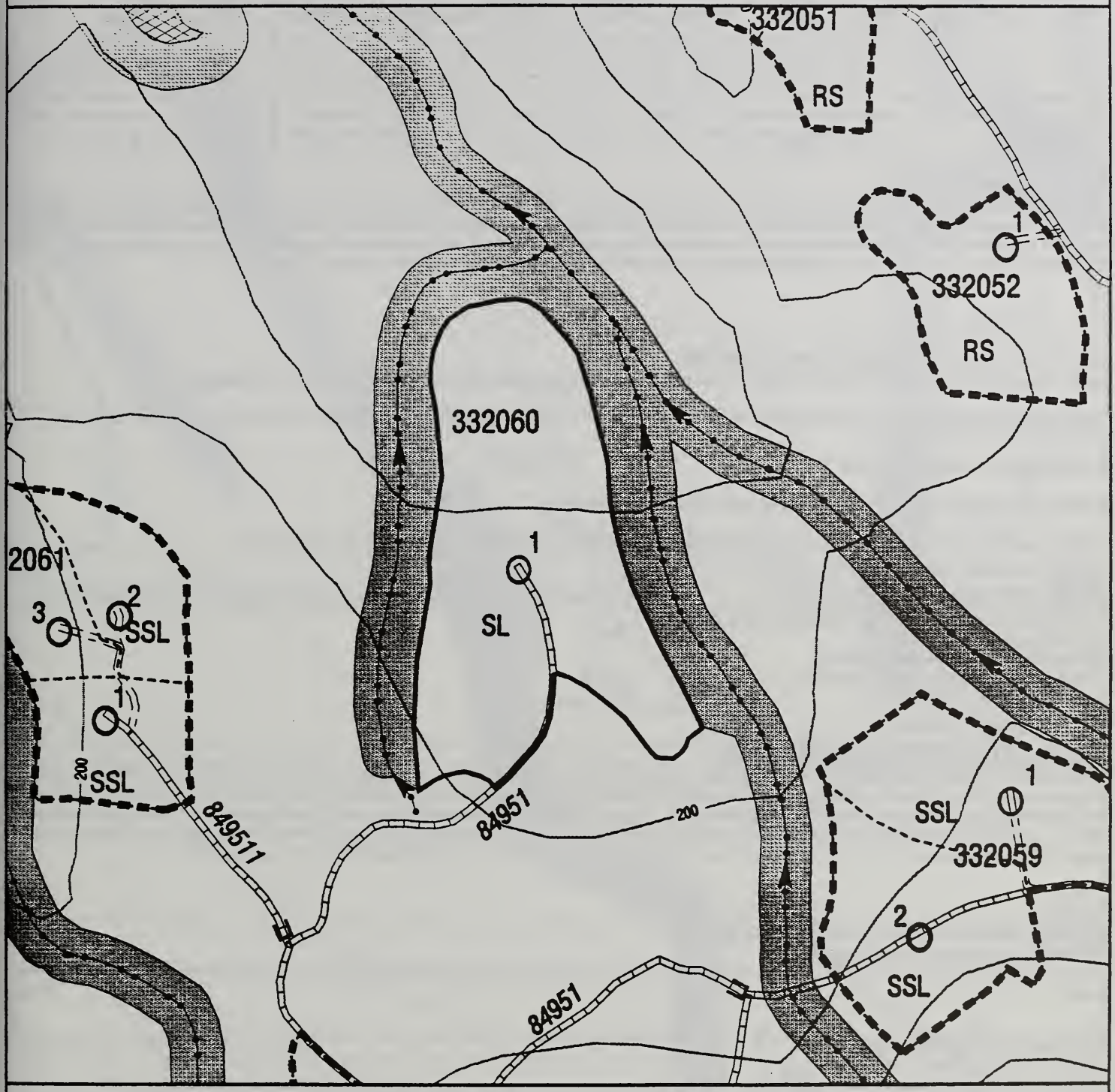
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332060 ALTERNATIVE(S): D E

ACRES: 35.92 TOTAL NET MBF: 546 QUAD(S): SUM85 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 27 ROLL NO.: 888 PRINT NO.: 148



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:19:29.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332061	MAP #:	47	ACRES:	25
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	684-147
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	11	46%	XC	410	45	M	MP	L	M	L
VC-5	27.8	-	-	-	-	-	-	-	-	-	-
VC-6	37.6	13	54%	XC	410-430	57	H	M	-	H	L
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		24	100%	-	-	51	H	M	Mistletoe	H	L

STAND CHARACTERISTICS

Low elevation mixed conifer stand in volume classes 4 and 6. Sawtimber is large with high defect and average mortality in VC4 and low defect and mortality in VC6. Stand structure is uneven in VC4 and functionally even-aged in VC6 with overstory age 300-350 years. Slopes are gentle, comprised of a riparian-fringe bench and small ridge to the east. Soils are somewhat poorly to moderately drained. Understory is blueberry and rusty menziesia, with some devils club and shield fern in VC6. Advanced conifer regeneration is present; of variable quality; regeneration potential is moderate to high. Mistletoe is a management concern in this unit.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Most of the unit is suitable for heavy partial cut. Seventy feet of temporary road required. Tail trees may be needed.

Visual Resource Management: VQO is Modification as viewed from the small boat route. The flat viewing angle should screen the stand from view, utilizing the trees between units and on the stand edges.

Soils / Geology: No concerns were noted.

Fisheries / Watershed: A Class 1 stream on the west unit boundary requires buffering.

Wildlife: Reserving green trees and snags would maintain vertical structural habitats. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The west boundary follows the buffered Class 1 stream. On the south, the unit is bounded by low site. Other boundaries conform to logical harvest system layout and timber types.

Soil, Water, and Wildlife Conservation:

BMP 12.6: The Class 1 stream is buffered.
BMP 18.1: Consistent with harvest system requirements, reserve green trees and snags (where safety permits) to provide structural habitat diversity for wildlife.
BMP 13.15: Unit configured to exclude muskegs.

Forest Productivity Activities:

Soil warming from direct exposure to solar radiation will increase biological activity and, consequently, productivity. Windthrow of reserve and border trees will mix mineral and organic soil layers, increasing fertility and reducing podzolization. Reduction of dwarf mistletoe-infected portion of stand will increase timber production.

MONITORING PLAN

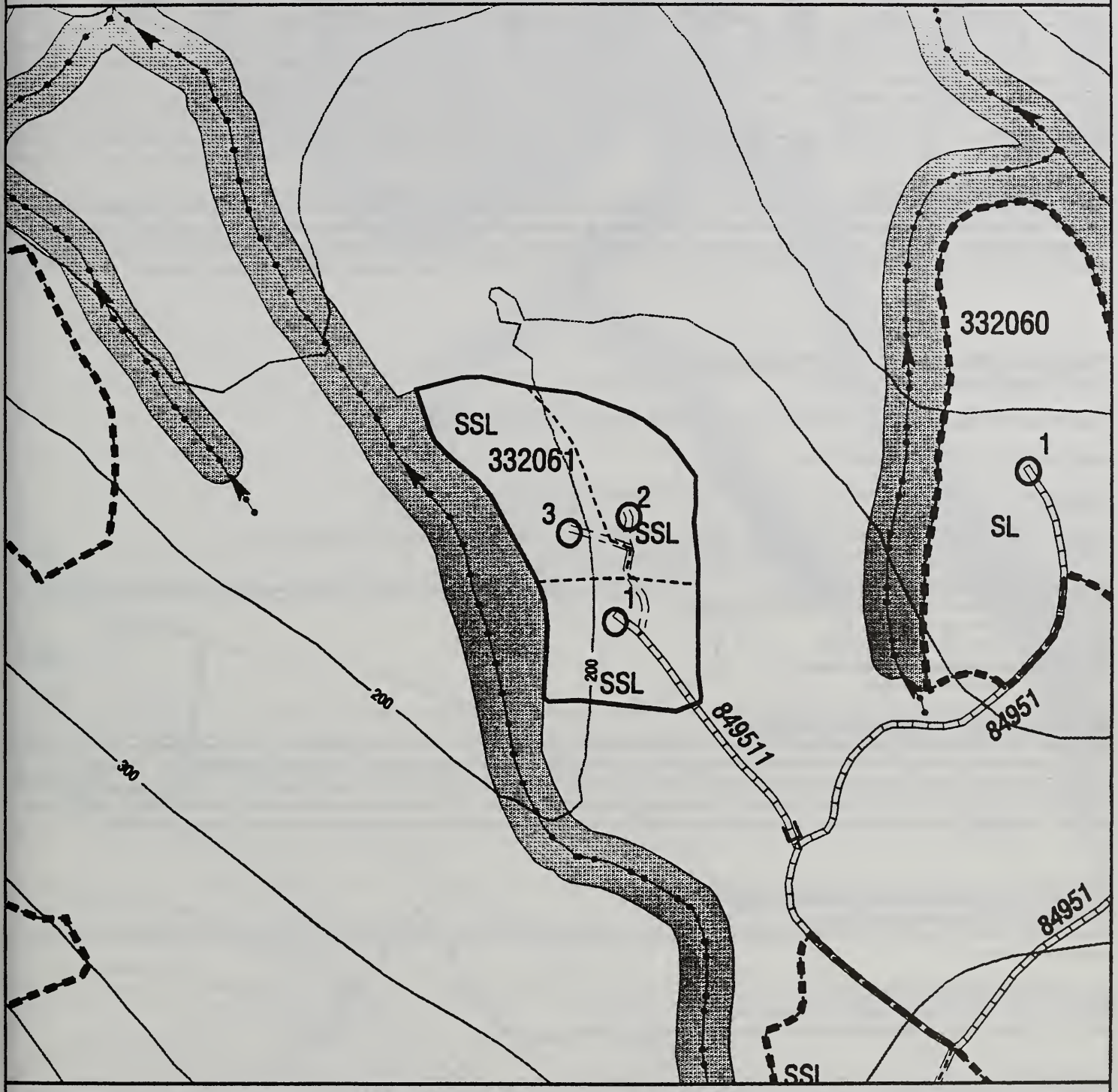
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332061 ALTERNATIVE(S): D E

ACRES: 24.47 TOTAL NET MBF: 569.2 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 147



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:26:23.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332063	MAP #:	44	ACRES:	23
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	684-147
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	20	85%	HC	230-220	50	M	MP	H	L	L
VC-5	27.8	3	15%	WH	110-120	60	M	M	M	M	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		23	100%	-	-	51	M	MP	mistletoe	L	L

STAND CHARACTERISTICS

Low elevation stand of mostly w. hemlock-yellow cedar series in VC4 and a few acres of W. hemlock series in VC5 at the northern extent of the unit. Sawtimber is small in VC4 with high defect and medium in VC5 with very low defect; mortality is average. Stand structure is functionally even-aged with overstory age 250-300+ years. Slopes are moderate and rolling to gentle with a single class 3 v-notch stream; soil drainage is moderately poor to moderate. Understory is blueberry and rusty menziesia with skunk cabbage, and some devils club in VC5. Little advanced reproduction is present; regeneration potential is low to moderate. Mistletoe is severe in this stand.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter logging.

Visual Resource Management: VQO is Modification, as viewed from the background of the small boat route.

Soils / Geology: No concerns have been noted.

Fisheries / Watershed: Streams on the NW and E of the stand require buffering.

Wildlife: Reserving green trees and snags would maintain vertical structural habitats. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: The unit as laid out will not impact cultural resources.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are partially selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Many of the reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of the reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The north boundary of the unit conforms to the estuary buffer. The east and northwest boundaries follow the stream buffers. Other boundaries were placed along transitions to low site and muskeg.

Soil, Water, and Wildlife Conservation:

BMP 12.6: The buffers along the streams will protect fisheries.
BMP 18.1: Reserve trees provide habitat structure and snag recruitment.

Forest Productivity Activities:

Since logging will not result in significant site disturbance, there will be a minimal amount of soil mixing. Some reserve trees will blow down, which may reverse podzolization on a limited scale. Shrub cover will increase after logging. This will tend to shade the soil from direct solar warming in many parts of the stand, resulting in little change in decomposition rates and soil biological activity. Reduction in mistletoe infection and proportion of hemlock stocking should result in healthier stand with greater productivity. Overall effect of logging on productivity is expected to be neutral to slightly positive.

MONITORING PLAN

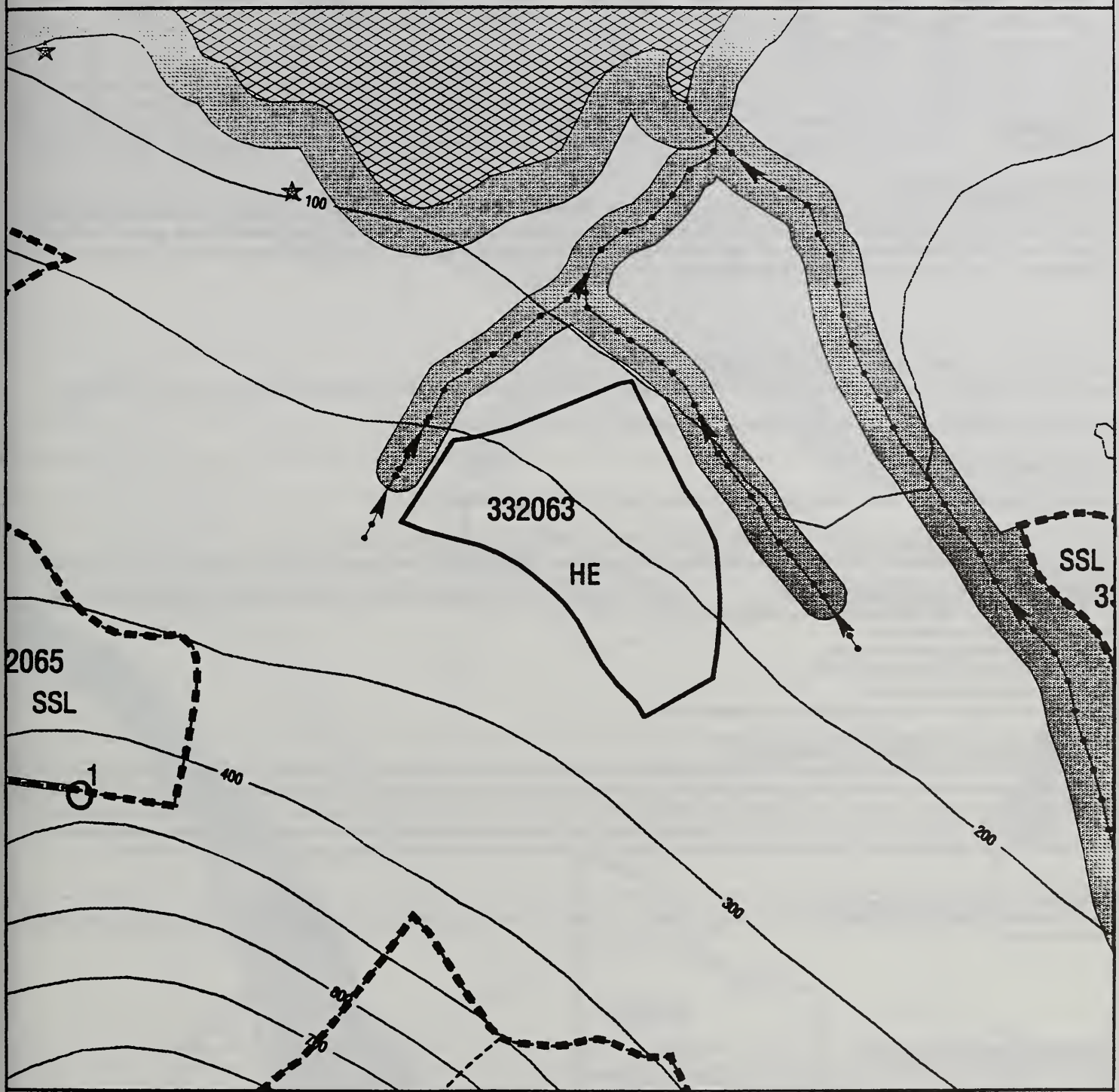
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332063 ALTERNATIVE(S): D

ACRES: 23.41 TOTAL NET MBF: 304.6 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 147



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332064	MAP #:	38	ACRES:	7
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	684-147
						ALTERNATIVE(S):	D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	4.6	62%	HC	230-220	45	M	MP	H	L	L
VC-5	27.8	2.8	38%	HC	230-220	55	M	MP	H	L	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		7.4	100%	-	-	49	M	MP	mistletoe	L	L

STAND CHARACTERISTICS

Low elevation stand of W. hemlock-yellow cedar series in volume classes 4 and 5. Sawtimber is small in VC4 with high defect, and medium in VC5 with lower than average defect; mortality is average. Stand structure is uneven with overstory age 300+ years. Slopes are relatively gentle and rolling, with moderately poorly drained soils and a class 3 v-notch stream in the unit. Understory is blueberry and rusty menziesia with common skunk cabbage. Advanced conifer reproduction is not common; regeneration potential is low. Mistletoe and regeneration potential are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit as reconfigured for estuary is most economically accessed by helicopter. Unit is suitable for partial cutting. Snags are safety concern.

Visual Resource Management: VQO is Partial Retention, as viewed from the background of the small boat route.

Soils / Geology: No concerns were noted.

Fisheries / Watershed: Class 2 stream requires buffering. It becomes a Class III stream 100 ft. northeast of unit.

Wildlife: Retention of live trees and snags will increase structural wildlife habitat. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: Unit as modified will not impact cultural resources. Culturally Modified Trees (yellow cedars) were located in the unit and documented.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Move the stand to a more vigorous early successional stage.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.
(6) Maintain the integrity of the buffer which protects the adjacent estuary.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative. The stand boundaries were adjusted to conform to the estuary buffer, eliminating substantial volume from the unit. As a result, the unit cannot support construction of access roading, but will support helicopter logging. By concentrating the cut on mistletoe-infected hemlock, the condition of the residual stand can be enhanced. In addition, yellow cedar showing indications of decline can be harvested. Partial cutting will easily meet the visual quality objective for the stand, maintain structural diversity for wildlife, and protect the Culturally Modified Trees. In some areas of the stand, the cut will resemble a sanitation salvage, however new stand regeneration is intended to occur. Clearcut with reserves would require removal of uneconomical material or leaving an excess of culls on the forest floor.

Description of Unit Boundary Determination:

The unit boundary was adjusted substantially to exclude the estuary buffer on the north. The remaining boundaries were installed on timber type lines and along the Class 2 stream to the west.

Soil, Water, and Wildlife Conservation:

BMP 13.6: The Class 2 stream buffer as designated will be protected during logging.
BMP 18.1: Partial harvest ensures that a large number of live trees will be retained for structural diversity and special habitats for wildlife. Snags will be retained where removal is not required for human safety.

Forest Productivity Activities:

Little change in productivity is expected from the planned harvest. There will be some ground disturbance from windthrow of reserve trees which could benefit soil functions.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332064 ALTERNATIVE(S): D

ACRES: 7.6 TOTAL NET MBF: 117.7 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 147



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332065	MAP #:	175	ACRES:	21
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	684-147
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	20.4	99%	WH	130-110	50	L	MP	H	M	L
VC-5	27.8	0.2	1%	WH	110-130	55	L	M	H	M	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		20.6	100%	-	-	50	L	MP	mistletoe	M	L

STAND CHARACTERISTICS

Lower elevation stand of W. hemlock series with small cedar and spruce components in volume class 4, composed of medium sawtimber with high defect and average mortality. Stand structure is functionally even-aged with overstory age 350+ years. Slopes are gentle to moderate with moderately poor to moderate soil drainage and a single class 3 stream. Understory is blueberry and rusty menziesia with common skunk cabbage. Advanced conifer regeneration is sparse; regeneration potential is moderate. Mistletoe is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Stand is suitable for heavy partial cut. Skyline yarding.

Visual Resource Management: The western part of the stand is VQO of Partial Retention, and the remainder of the stand is VQO of Modification. Concerns: Cumulative visual effects of multiple unit harvest in the vicinity, as viewed from small boat route.

Soils / Geology: No concerns identified.

Fisheries / Watershed: No streams in the unit; no concerns with fisheries and watershed resources.

Wildlife: Retention of live trees and snags will increase structural wildlife habitat. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns identified.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

This unit has potential for effectively combining two of the silv. methods in an adaptive management trial or demonstration. Selected methods are clearcut and clearcut with reserves. The combined methods will meet the integrated resource objectives: (1) It converts the unit to a more vigorous young stand. (2) A substantial part of net volume available will be harvested. (3) Unit design, location, and silv. treatment will allow the VQO's of Partial Retention and Modification to be met. (4) Site quality and productivity will be maintained or improved, due to increased soil functioning and reduction of dwarf mistletoe infection centers. (5) Reserve trees and enclaves of various densities will provide large defective hemlock and spruce for vertical diversity and cavity nesting habitat, as well as seed sources for higher value timber species. 6) Logging systems feasibility is good for a heavy partial cut. Reserves will be located in most windfirm sites to ensure that some trees will be left standing for structural diversity.

Description of Unit Boundary Determination:

The northern boundary generally follows an adjacent muskeg. The southern boundary follows the logging access road. Other boundaries were established from a combination of harvest settings and timber type.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Snags will be retained where not a safety hazard. Reserve trees will add to structural diversity in the new stand.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and projected blowdown of reserve trees will result in increased soil biological activity and decomposition rate, potentially increasing productivity. Cutting of dwarf mistletoe infected trees and patches will reduce disease in the successor stand and is expected to increase productivity.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332065 ALTERNATIVE(S): E

ACRES: 20.58 TOTAL NET MBF: 233.2 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 147



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332066	MAP #:	50	ACRES:	33
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-142
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	7	21%	XC	420-410	50	L	MP	M	L	L
VC-5	27.8	17	52%	WH	130-120	55	L	MP	M	M	L
VC-6	37.6	9	27%	WH	110-120	68	M	M	-	H	L
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		33	100%	-	-	57	L	MP	mistletoe	M	L

STAND CHARACTERISTICS

Lower elevation stand of W. hemlock series in VC5 and VC6, and mixed conifer series in VC4. Medium to large sawtimber has low to average defect and mortality. Stand structure is uneven-aged in VC4, functionally even-aged in VC5, and 2-storied in VC6. Slopes are gentle to moderate in VC4 and VC5 with moderately poor soil drainage, and moderately steep in VC6 with moderately well drained soils. Understory is blueberry with abundant skunk cabbage, and some shield fern on better drained microsites. Advanced conifer regeneration occurs in groups under canopy gaps in VC6, with some scattered throughout the unit; regeneration potential is mostly moderate, but ranges from low to high by plant association. Mistletoe and cedar decline are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Stand is suitable for heavy partial cut. Skyline. Fall timber away from stream buffers. Multiple tailholds in north.

Visual Resource Management: VQO is Partial Retention as viewed from midground of the small boat route. Concern for cumulative effects of harvesting multiple units in the vicinity.

Soils / Geology: No concerns identified.

Fisheries / Watershed: No concerns for Class 3 streams in the unit. Class I and II streams were buffered.

Wildlife: Retention of live trees and snags will increase structural wildlife habitat. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns were identified.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Selected method is clearcut with reserves, which will meet the integrated resource objectives: (1) It converts the unit to a more vigorous young stand. (2) A substantial part (about 90% or more) of the net volume will be harvested. (3) Unit design, location, and silv. treatment will allow the VQO of Partial Retention to be met. (4) Site quality and productivity will be maintained or improved, due to increased soil functioning and reduction of dwarf mistletoe infection centers. (5) Reserve trees and enclaves of various densities will provide large defective hemlock and spruce for vertical diversity and cavity nesting habitat, as well as seed sources for higher value timber species. 6) Logging systems feasibility is good for a heavy partial cut. Reserves will be located in most windfirm sites to ensure that some trees will be left standing for structural diversity. Clearcut would harvest more volume, but not meet VQO. Other methods are less feasible economically and operationally.

Description of Unit Boundary Determination:

The northern boundary avoids the adjacent Class 2 stream. The north/northwest boundary conforms to the muskeg transition. Other boundaries follow logical harvest settings and timber types.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Snags will be retained where not a safety hazard. Reserve trees will add to structural diversity in the new stand.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance and projected blowdown of reserve trees will result in increased soil biological activity and decomposition rate, potentially increasing productivity. Cutting of dwarf mistletoe infected trees and patches will reduce disease in the successor stand and is expected to increase productivity.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332066 ALTERNATIVE(S): E

ACRES: 33.34 TOTAL NET MBF: 786.3 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 142



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332067	MAP #:	57	ACRES:	40
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	684-148
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	8	20%	WH	130-110	45	L	MP	M	M	M
VC-5	27.8	32	80%	WH	130-110	50	M	MP	M	M	M
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		40	100%	-	-	49	M	MP	mistletoe	M	M

STAND CHARACTERISTICS

The stand extends northeast, from the nose of a mid-elevation ridge to the lower slopes. Slopes are mostly moderate, but steep pitches range upwards to 80%. Soils are somewhat poorly drained, but no muskegs were found in the stand. No streams are in the unit. The timber is primarily western hemlock series in volume classes 4 & 5, medium sawtimber, with average defect in VC4 and very low defect in VC-5. Species composition is primarily western and mountain hemlock, with appreciable amounts of Sitka spruce and yellow cedar. Mortality is average to low. Stand structure varies, with a mosaic of uneven-aged and 2-storied canopies. Overstory age generally exceeds 300 years. Understory is composed of blueberry with abundant skunk cabbage. Advanced conifer regeneration is common, but about 50% defective or suppressed; regeneration potential is moderate. Mistletoe occurs in a patchy distribution, and is a management concern. Moderate animal damage, mostly from porcupines.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Stand is suitable for heavy partial cut. Road access would require about 1/4 of the stand to be downhill yarding. Snags are safety concern/constraint. Skyline yarding. Tailtrees required.

Visual Resource Management: VQO is Modification. Viewed in midground and background from small boat route on Port Houghton. Cumulative impact of harvesting multiple units in this area would not meet VQO. This unit is in especially sensitive location. Can mitigate by partial cutting on top.

Soils / Geology: No special concerns.

Fisheries / Watershed: No streams, no concerns.

Wildlife: Retention of snags and live trees would enhance habitats for many wildlife species. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves best meets resource objectives: (1) It converts the unit to a more vigorous young stand, and will reduce the level of dwarf mistletoe. (2) About 90% of net volume available will be logged, contributing to the programmed harvest. (3) VQO of Modification will be met by retaining substantial amounts of green trees in critical locations. (5) Site quality will be maintained. Soil warming will increase decomposition rate and could increase productivity of the new stand. Reserve groups will provide structural diversity and ecological functions. Alternatively, clearcutting the entire unit (or clearcut with reserves) would increase timber yield but not meet visual objectives as well. Group selection and sanitation salvage are of questionable engineering feasibility. Deferring treatment would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundaries were laid out to conform with timber type boundaries and logical breaks for logging. The upper boundary conforms with the top of the ridge; the lower boundary follows a slope break at the terminus of the logging setting. There was no need to modify the boundaries from the original (paper) plan to adjust for soil, water, or operational constraints.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Reserve groups provide habitat diversity and snag recruitment.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production. Reduction of dwarf mistletoe during the regeneration process and through species selection at precommercial thinning can increase productivity of the new stand.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332067 ALTERNATIVE(S): B E

ACRES: 40.2 TOTAL NET MBF: 845.2 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 148



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332068	MAP #:	69	ACRES:	37
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	684-148
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	9	23%	XC-HC	420-410	50	M	MP	L	L	M
VC-5	27.8	29	77%	WH	110-120	65	M	M	-	H	H
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		37	100%	-	-	62	M	M	cedar decline	H	H

STAND CHARACTERISTICS

Mid to upper elevation stand, 3/4 western hemlock series in VC5 and 1/4 mixed conifer and western hemlock-yellow cedar series in VC4. The VC5 stratum contains large sawtimber with low defect; theVC4 stratum is stocked with medium sawtimber with medium defect. Mortality is relatively high, with scattered snags throughout, especially in the VC5 stratum. Stand structure is a mosaic of even-aged and 2-storied, with overstory age often exceeding 350 years. NE-facing slopes are moderately steep to steep with three class 3 drainages, including one v-notch stream. Soils are moderately well to poorly drained. Understory is blueberry, with devils club and shield fern in parts of VC5 and skunk cabbage in most of VC4. Advanced conifer regeneration is fairly sparse; regeneration potential ranges from low in the mixed conifer VC4 sites, to high in the more productive sites. Cedar decline is present in parts of VC4.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Stand is suitable for heavy partial cut. Road access would require downhill yarding on a minor portion of the stand. Snags are safety concern/constraint. Complex guyline anchors, multiple tailholds, tail trees required. Small length temporary road required.

Visual Resource Management: VQO is Modification. Midground and background from small boat route on Port Houghton. Concern that cumulative effects from adjacent units will result in Maximum Modification. Opportunities for mitigation by partial cutting, group selection, or dropping.

Soils / Geology: Original boundary included areas of instability, and boundary was adjusted. No problems anticipated from unit as modified.

Fisheries / Watershed: No streams in the unit, and no concerns for fisheries or watershed.

Wildlife: Opportunities for retaining snags and green trees for structural habitat diversity. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves best meets resource objectives: (1) It converts the unit to a more vigorous young stand, and will reduce the level of dwarf mistletoe. (2) About 90% of net volume available will be logged, contributing to the programmed harvest. (3) VQO of Modification will be met by retaining substantial amounts of green trees in critical locations. (5) Site quality will be maintained. Soil warming will increase decomposition rate and could increase productivity of the new stand. Reserve groups will provide structural diversity and ecological functions. Alternatively, clearcutting the entire unit (or clearcut with reserves) would increase timber yield but not meet visual objectives as well. Group selection and sanitation salvage are of questionable engineering feasibility. Deferring treatment would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The northern extension of the original unit layout was dropped due to soil instability and visuals. An extension to the southeast was added to make a logical and operationally feasible unit that conforms to topography and timber type. This resulted in a reconfiguration of the unit, from the original vertical slope orientation to a more horizontal, linear setting.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Unit reconfigured to avoid unstable soils.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production.

MONITORING PLAN

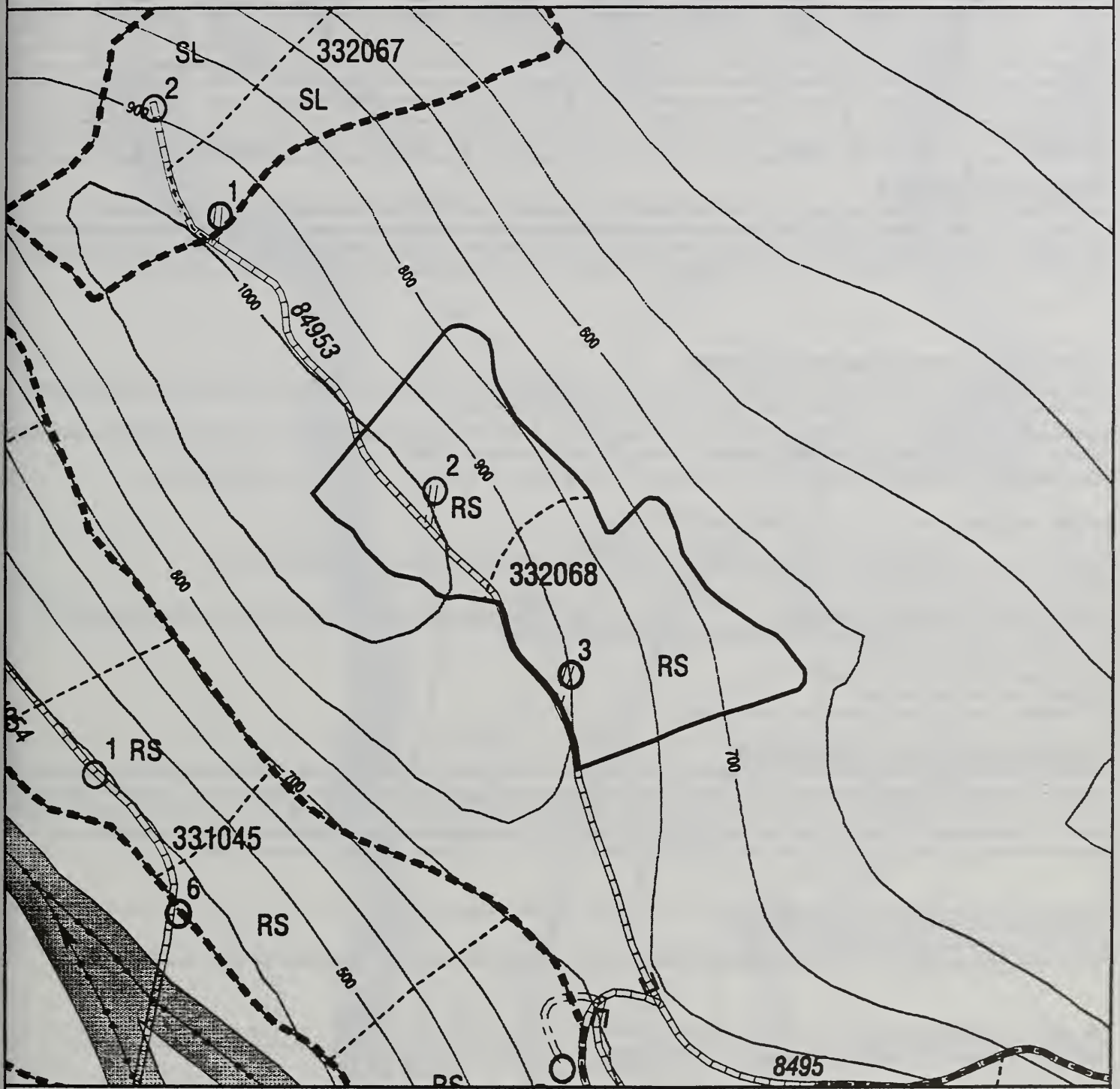
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332068 ALTERNATIVE(S): B D E

ACRES: 37.3 TOTAL NET MBF: 768 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 148



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:56:47.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332069	MAP #:	60	ACRES:	42
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-160
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	42	100%	HC-XC	220-210	50	M	MP	L/M	M	L
VC-5	27.8	-	-	-	-	-	-	-	-	-	-
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		42	100%	-	-	50	M	MP	m'toe/decline	M	L

STAND CHARACTERISTICS

Lower elevation stand of w. hemlock-yellow cedar and mixed conifer series in VC4, composed of medium sawtimber with low defect and mortality. Stand structure is functionally even-aged with overstory age 350+ years. NW-facing slopes are gentle to moderate with moderately poor soil drainage. Understory is composed of blueberry and rusty menziesia with common skunk cabbage, and deer cabbage indicating areas of poorer productivity. Advanced conifer regeneration occupies 20-40% understory cover with variable quality; regeneration potential is moderate, to low where deer cabbage is abundant. Mistletoe and cedar decline are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Suitable for heavy partial cutting. Snag retention not recommended within the unit, due to human safety. Some skyline extensions through the stream buffer may be needed. Complex guyline anchors required outside of unit. Temporary spur required.

Visual Resource Management: VQO is Modification. Migration and background from small boat route on Fort Houghton. Concern that cumulative effects from adjacent units will result in Maximum Modification. Opportunities for mitigation by partial cutting, group selection, or dropping.

Soils / Geology: No special concerns; adjacent Class 3 stream is adequately buffered, and unit boundaries were located to avoid areas of high instability.

Fisheries / Watershed: Adjacent Class II stream has been buffered; no concerns.

Wildlife: Opportunities for retaining snags and green trees for structural habitat diversity. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.
(5) Some skyline extensions through the buffer may be necessary.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundaries were determined from the location of the Class 3 stream on the west and the extent of timber types and logical harvest settings elsewhere.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Unit configured to avoid stream and muskeg.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production. Planting of yellow cedar will increase or maintain compositional diversity, and could increase productivity as compared with a stand of lesser species richness.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332069 ALTERNATIVE(S): B C D E

ACRES: 41.57 TOTAL NET MBF: 469 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 160



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332070	MAP #:	66	ACRES:	31
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-160
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	1	2%	XC-WH	420-130	45	M	P	L	M	H
VC-5	27.8	-	-	-	-	-	-	-	-	-	-
VC-6	37.6	31	98%	WH	110-170	60	M	MP	L	M	H
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**31**	**100%**	-	-	**60**	**M**	**MP**	mistletoe	**M**	**H**

STAND CHARACTERISTICS

Lower to mid elevation stand of western hemlock series with scattered large spruce in VC6, and a small inclusion of mixed conifer in VC4. Sawtimber is medium size with low defect and mortality. Stand structure is functionally even-aged with overstory ages exceeding 300 years. Moderately steep to extremely steep slopes are irregular and broken, with moderately well to somewhat poorly drained soils. There is a class 3 V-notch stream through the middle of the unit, with a recent debris torrent down a 120% slope, indicating instability. Understory is a mixture of blueberry, skunk cabbage, devils club, and shield fern on better microsites. A moderate amount of western hemlock regeneration occurs in the unit; regeneration potential is moderate. Streamcourse instability and mistletoe on upper southern slopes are management concerns in this unit; visuals and windthrow are only moderate concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: From a logging systems perspective, the area is not suitable for partial cutting. Snag retention would create safety hazard to woods workers. Tailhold outside of unit required. Two stations of temporary spur road required.

Visual Resource Management: VQO is Modification. Midground and background from small boat route on Port Houghton. Concern that cumulative effects from adjacent units will result in Maximum Modification. Opportunities for mitigation by partial cutting, group selection, or dropping.

Soils / Geology: Unstable reaches in Class 3 V-notches. Unit boundary and settings have been modified to minimize potential for soil instability.

Fisheries / Watershed: A Class 2 stream bisects the original unit which was changed to be a minimum of 100 ft. from the stream. Now, upstream, it forks and becomes Class 3, with steepened, V-notch reaches that tend to be unstable.

Wildlife: Opportunities for retaining snags and green trees for structural habitat diversity. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundary was modified to meet adjacency and wildlife objectives and avoid conflict with the Class 2 stream. Otherwise, the boundaries conform with logical harvest settings and timber type boundaries.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Modification of boundary and settings as described has reduced concerns for the steep V-notches in the Class 3 streams.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to benefit timber production.

MONITORING PLAN

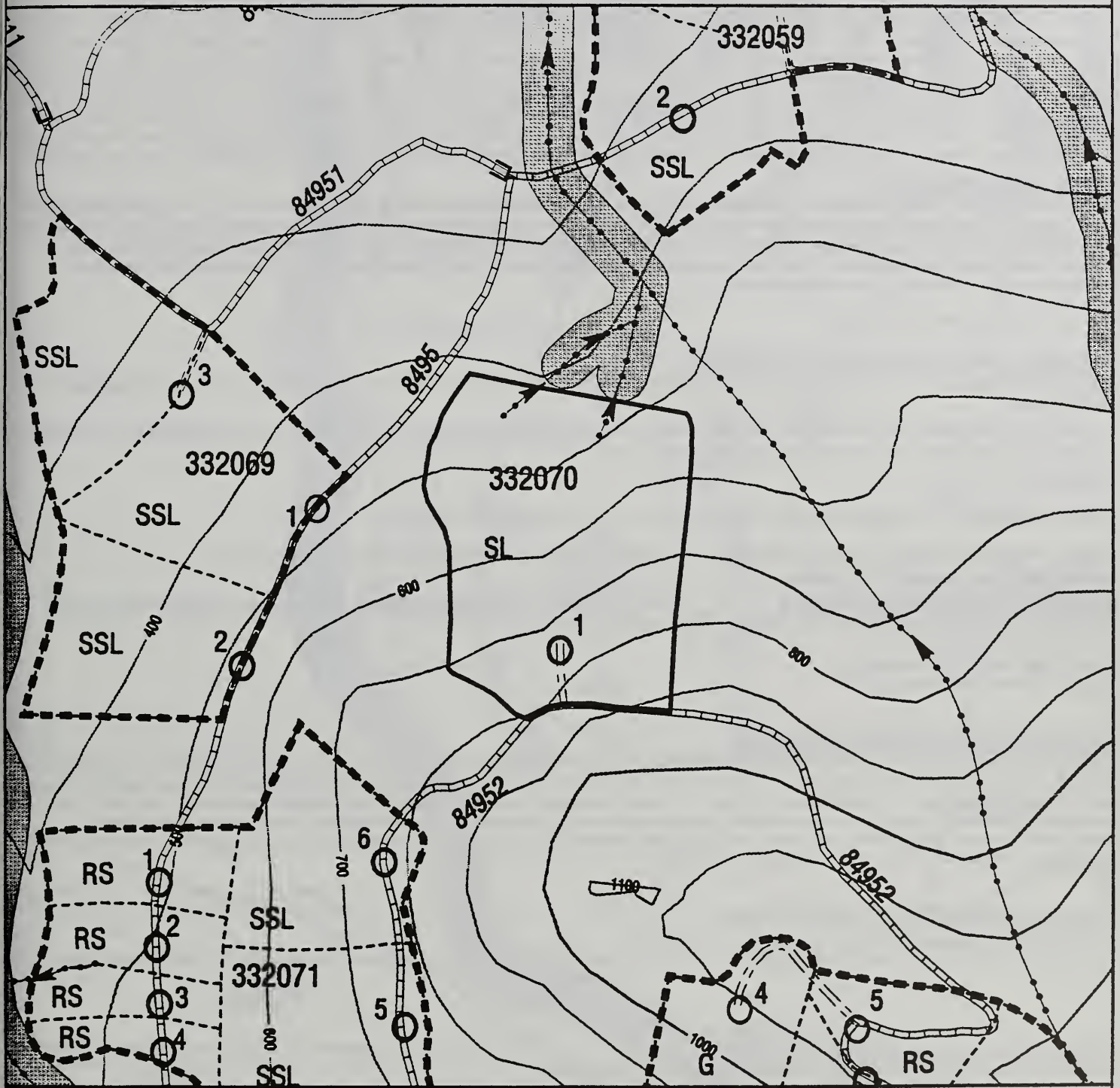
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332070 ALTERNATIVE(S): B C E

ACRES: 31.34 TOTAL NET MBF: 1037.9 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 160



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332071	MAP #:	74	ACRES:	44
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	27			PHOTO #'S:	684-160
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	32	72%	HC	220-230	50	M	MP	L	M	L
VC-5	27.8	7	17%	WH-HC	110-220	55	M	MP	M	H	L
VC-6	37.6	3	7%	WH	120-130	60	M	M	M	H	L
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	2	5%	XC	420-430	35	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		44	100%	-	-	49	M	MP	mistletoe	M	L

STAND CHARACTERISTICS

Mid elevation stand, 70% western hemlock-yellow cedar series in VC4, 25% western hemlock and western hemlock-yellow cedar series in VC 5 & 6, and 5% low-site mixed conifer inclusions. Sawtimber is medium sized with relatively low defect; mortality is high in VC4. Stand structure is functionally even-aged with overstory age exceeding 300 years. Slopes are moderately steep and somewhat poorly drained. Three Class 3 drainages occur in the unit, including one stable V-notch. Understory is a mixture of blueberry, skunk cabbage, and rusty menziesia. Mixed species regeneration is scattered throughout the unit; regeneration potential is moderate to high. Mistletoe is a management concern, and windthrow only a moderate concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: The area is suitable for a heavy partial cut. Snag retention is a safety concern. Skyline yarding. Split yarding at V-notches. Multiple guyline anchors required.

Visual Resource Management: VQO is Modification. Although the unit is in the background for the small boat route, its contribution to the viewshed impact is less significant than surrounding units, partially due to irregular shape and oblique viewing angle.

Soils / Geology: No concerns.

Fisheries / Watershed: Buffer is maintained above the slope break along the Class II stream. No concerns noted.

Wildlife: The opportunity for retaining snags and green trees for wildlife habitat diversity is noted. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

A combined treatment that incorporates clearcutting and clearcutting with reserves best meet resource objectives: (1) It converts the most of the unit to a more vigorous young stand. (2) About 90% of net volume available will be logged, contributing to the programmed harvest. (3) VQO of Modification will be met by retaining substantial amounts of green trees in critical locations. (5) Site quality will be maintained. Soil warming will increase decomposition rate and could increase productivity of the new stand. Reserve groups will provide structural diversity and ecological functions. Alternatively, clearcutting the entire unit would increase timber yield but not meet visual objectives. Shelterwood with reserves, group selection, and sanitation salvage are of questionable engineering feasibility. Deferring treatment would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

On the west, the boundary was adjusted to conform to the buffered Class 3 stream. All other boundaries were determined from logical timber types and harvest settings.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Logging systems design will address concerns with V-notches and stream buffering.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to benefit timber production. Reduction in mistletoe infection is expected to increase net production of timber.

MONITORING PLAN

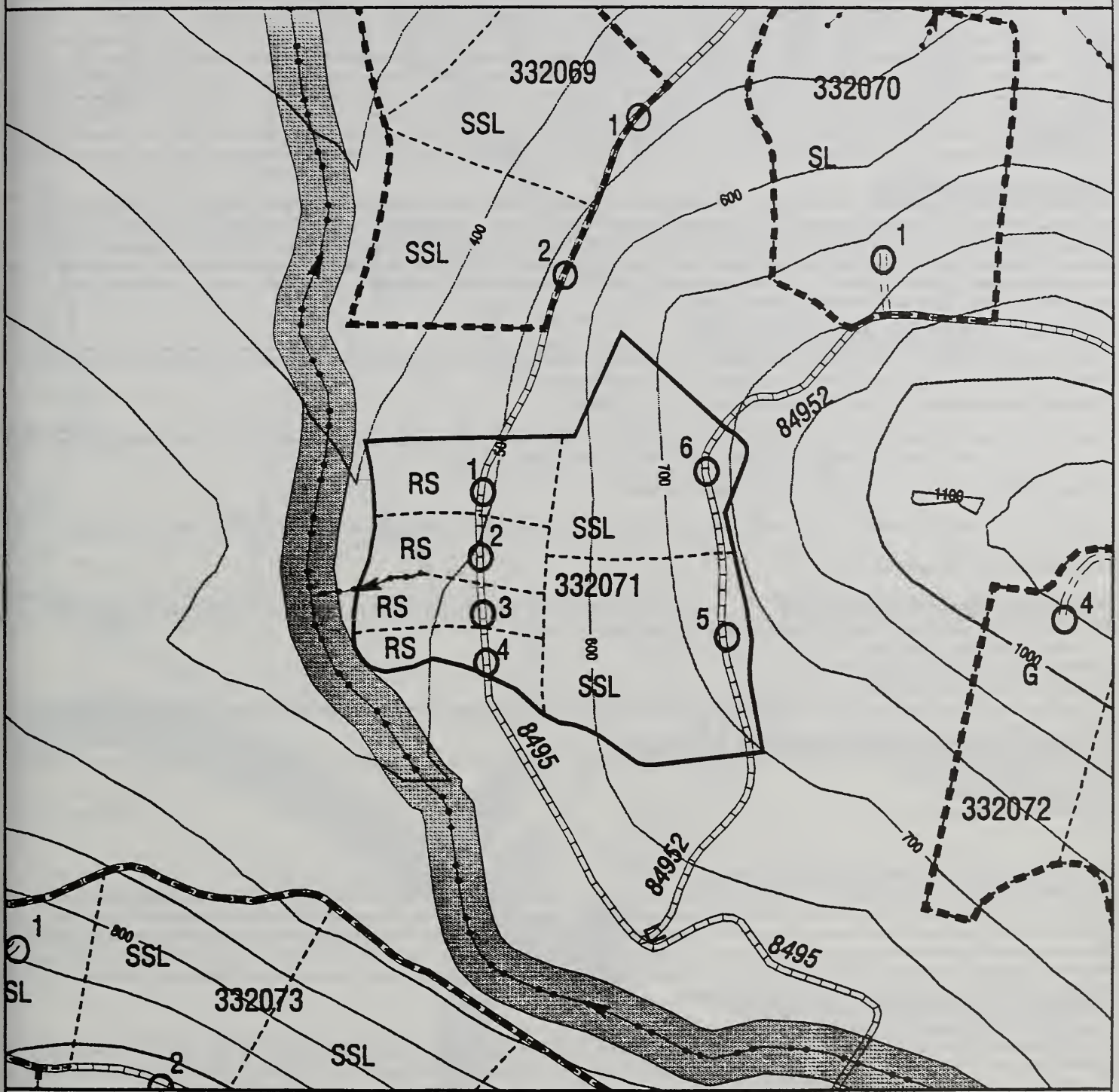
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332071 ALTERNATIVE(S): B C D E

ACRES: 47.75 TOTAL NET MBF: 635 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 27 ROLL NO.: 888 PRINT NO.: 149



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332072	MAP #:	75	ACRES:	90
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-160
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	12.7	12	13%	HC	220	50	L	P	-	L	M
VC-5	27.8	36	40%	HC	210-220	55	M	M	-	H	H
VC-6	37.6	42	47%	HC	210-220	60	M	M	-	H	H
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		90	100%	-	-	57	M	M	-	H	H

STAND CHARACTERISTICS

Mid to upper elevation stand of western hemlock-yellow cedar series in volume classes 4, 5, and 6. Groups of spruce occur in concave swales in VC6, and mtn. hemlock-spruce type is found on the north side of the ridge in VC5. Sawtimber is medium sized in VC4 and VC5, and large in VC6; defect is low throughout. Mortality is high in VC4 and average elsewhere. Stand structure is functionally even-aged with overstory age 350+ years. Slopes are moderately steep to steep, with extremely steep pitches in VC6 and evidence of instability; soils range from moderately well to poorly drained by plant association. There are many Class 3 watercourses, especially in VC6, with evidence of small mass wasting features. Understory is dense to moderately open blueberry, with skunk cabbage common to abundant and much devils club in VC6. Advanced conifer regeneration is sparse; regeneration potential is high except in VC4.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: From a logging systems perspective, the area is not suitable for partial cutting. Snag retention would create safety hazard to woods workers. Tailholds outside of unit boundary and in buffer to south required. Temporary spur required.

Visual Resource Management: Not seen from small boat route. VQO is Modification.

Soils / Geology: Buffering needed to protect Class 2 and Class 3 streams in south part of unit. Unstable areas in some steam reaches may require widening of buffers. Steep pitches in VC6 with some evidence of unstability. Buffers were increased to accommodate this concern.

Fisheries / Watershed: No fish in streams within unit as presently configured.

Wildlife: Snags and green trees should be retained where feasible to provide structural habitat. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.
(5) Skyline extensions with tailholds outside the unit boundary will be needed in the two eastern settings. Skyline extensions through stream buffer in south required.

VI. SILVICULTURE SYSTEM ALTERNATIVES CONSIDERED

(1) Clearcut-Selected Alternative
(2) Clearcut with Reserves
(3) Shelterwood with Reserves.
(4) Defer.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting best meets resource objectives: (1) It converts the most of the unit to a more vigorous young stand. (2) About 95% of net volume available will be logged, contributing to the programmed harvest. (3) VQO of Modification will be met. (4) Site quality will be maintained. Soil warming will increase decomposition rate and could increase productivity of the new stand. Although the general Rx is clearcutting, some groups will be reserved where operationally feasible, such as between settings. Reserve groups will provide structural diversity and ecological functions. Broad-scale even-aged management with reserve trees would not be operationally feasible. Group selection and sanitation salvage were not operationally feasible and were not considered in detailed analysis. Deferring treatment would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The southwest boundary of the unit generally follows timber transitions to low site and open conditions. The southern extension of the unit includes a high productivity site, with buffering for a series of streams. The original boundary in this part of the unit was drawn back, away from the streams, to add additional buffering of the steeps near the Class 2 and Class 3 streams. The north boundary of the unit follows the ridgeline and transition to mountain hemlock on lower site. The remaining areas conform to logical logging settings and timber types.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Modification of boundary and settings as described has reduced concerns for the steep V-notches in the Class 3 streams.
BMP 12.4: Unit configured away from flood plain.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to benefit timber production.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332072 ALTERNATIVE(S): B C D E

ACRES: 90 TOTAL NET MBF: 2394.8 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 160


84952
84952
84952

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332073	MAP #:	87	ACRES:	85
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	684-149
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	3	4%	XC-HC	420-220	50	M	P	-	L	L
VC-5	27.8	20	23%	HC	220	55	M	MP	-	M	M
VC-6	37.6	62	73%	WH	160-120	67	H	M	-	M	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		85	100%	-	-	64	H	M	-	M	M

STAND CHARACTERISTICS

Mid to upper elevation stand, 3/4 western hemlock series in VC6 and 1/4 western hemlock-yellow cedar series in VC5. A small area of low-productivity VC4 is also included in the unit, with mixed conifer and hemlock-cedar series. VC6 has large sawtimber with low-to-average defect. VC5 has medium sawtimber with high defect and average level of mortality. Stand structure is functionally even-aged with overstory age 200-300+ years. Slopes are moderately steep to steep with moderately well to somewhat poorly drained soils and few drainages. Understory is blueberry, with dense devils club and some shield fern in VC6 and abundant skunk cabbage in VC5. Advanced western hemlock regeneration is abundant, with groups including spruce regen in canopy gaps created by windthrow; regeneration potential is moderate. Windthrow is a management concern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area suitable for heavy partial cut. Layout suitable for small slackline system. No significant issues identified.

Visual Resource Management: VQO is Modification. Part of the unit is viewed from midground; part from background from small boat route. Concern that cumulative impacts of multiple units will result in Maximum Modification. Opportunities to mitigate: Partial cut, modify bdry. and shape of unit.

Soils / Geology: No concerns.

Fisheries / Watershed: No fish steam within unit. No concerns.

Wildlife: As in all other units, the opportunity for retaining snags and green trees for wildlife habitat diversity is noted. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting best meets resource objectives: (1) It converts the most of the unit to a more vigorous young stand. (2) About 95% of net volume available will be logged, contributing to the programmed harvest. (3) VQO of Modification will be met if the main prescription is modified where feasible to accommodate reserve trees and groups. (4) Site quality will be maintained. Soil warming will increase decomposition rate and could increase productivity of the new stand. Although the general Rx is clearcutting, some groups will be reserved where operationally feasible, such as between settings. Reserve groups will provide structural diversity and a source of blowdown for ecological functioning. However, broad-scale even-aged management with reserve trees would not be operationally feasible. Group selection and sanitation salvage were not operationally feasible and were not considered in detailed analysis. Deferring treatment would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The southwest boundary follows the ridgeline. The north/northeast boundary is flagged along the transition to open timber, following the buffer along the Class 2 stream in the east corner of the unit. The general conformation of the unit is along timber type transitions and logical logging settings.

Soil, Water, and Wildlife Conservation:

No unique concerns were identified.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to benefit timber production.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332073 ALTERNATIVE(S): B C E

ACRES: 85.28 TOTAL NET MBF: 2589.2 QUAD(S): SUM85 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 27 ROLL NO.: 888 PRINT NO.: 149



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332074	MAP #:	99	ACRES:	41
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-159
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	16	40%	XC	440	50	L	MP	M	M	M
VC-5	27.8	24	60%	WH	120-110	55	M	M	-	H	M
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		41	100%	-	-	53	M	M	cedar decline	H	M

STAND CHARACTERISTICS

Mid to upper elevation stand, 60% W. hemlock series in VC5 and 40% mixed conifer series in VC4. Sawtimber is large in VC5 with average defect and high mortality, and small in VC4, with low defect and average mortality. Stand stricture is functionally even-aged, with overstory age 150-250 years. Slopes are moderately steep to steep, with moderately-well to poorly-drained soils; several small class 3 drainages dissect the slopes. Understory is blueberry, with shield fern in VC6 and skunk cabbage and lady fern in VC4. Advanced regeneration is common; regeneration potential is high to moderate. Cedar decline is present in VC4.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is suitable for heavy partial cut. Concerns for soils need to be addressed in layout of harvest systems. Slackline yarding. Tailtrees required. Directional falling in NE and NW to avoid steep slopes. Skyline extensions through buffers required. Fall away from buffers.

Visual Resource Management: VQO is Modification; seen in background from small boat route. Concern with cumulative visual impacts from harvest of multiple units. This unit contributes less, but mitigation of harvest effects should be considered.

Soils / Geology: Unstable soils with recent slide adjacent to the original west boundary (but not in the unit). Steep slope break in this area. Areas below the recent slide are very wet, and a considerable amount of blowdown is evident. Unit boundary avoids areas with soil hazards.

Fisheries / Watershed: Class 2 stream north/northeast of unit. Unit boundary is well back from the buffer along these streams.

Wildlife: Snags and green reserve trees will provide structural quality to wildlife habitat. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.
(5) Directional felling away from the Class 3 stream on the east boundary is recommended. Skyline rigging across this buffer will be required.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The original boundary as delineated on the paper plan was modified after reconnaissance and field review to address soil concerns. The boundary was pulled back from the steep, wet, and unstable areas on the west and northwest. The remaining unit follows the buffered edge of the Class 3 stream on the east, and generally conforms to logical timber types and harvest settings.

Soil, Water, and Wildlife Conservation:

BMP 13.5, 13.15: The unit boundaries were adjusted to exclude the steep and unstable areas, as well as the adjacent wet areas below. The unit as finally configured does not pose unusual hazard for soil and water.
BMP 18.1: Reserve trees provide snag recruitment and habitat diversity.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to benefit timber production. No significant changes in productivity are expected in the cedar decline areas.

MONITORING PLAN

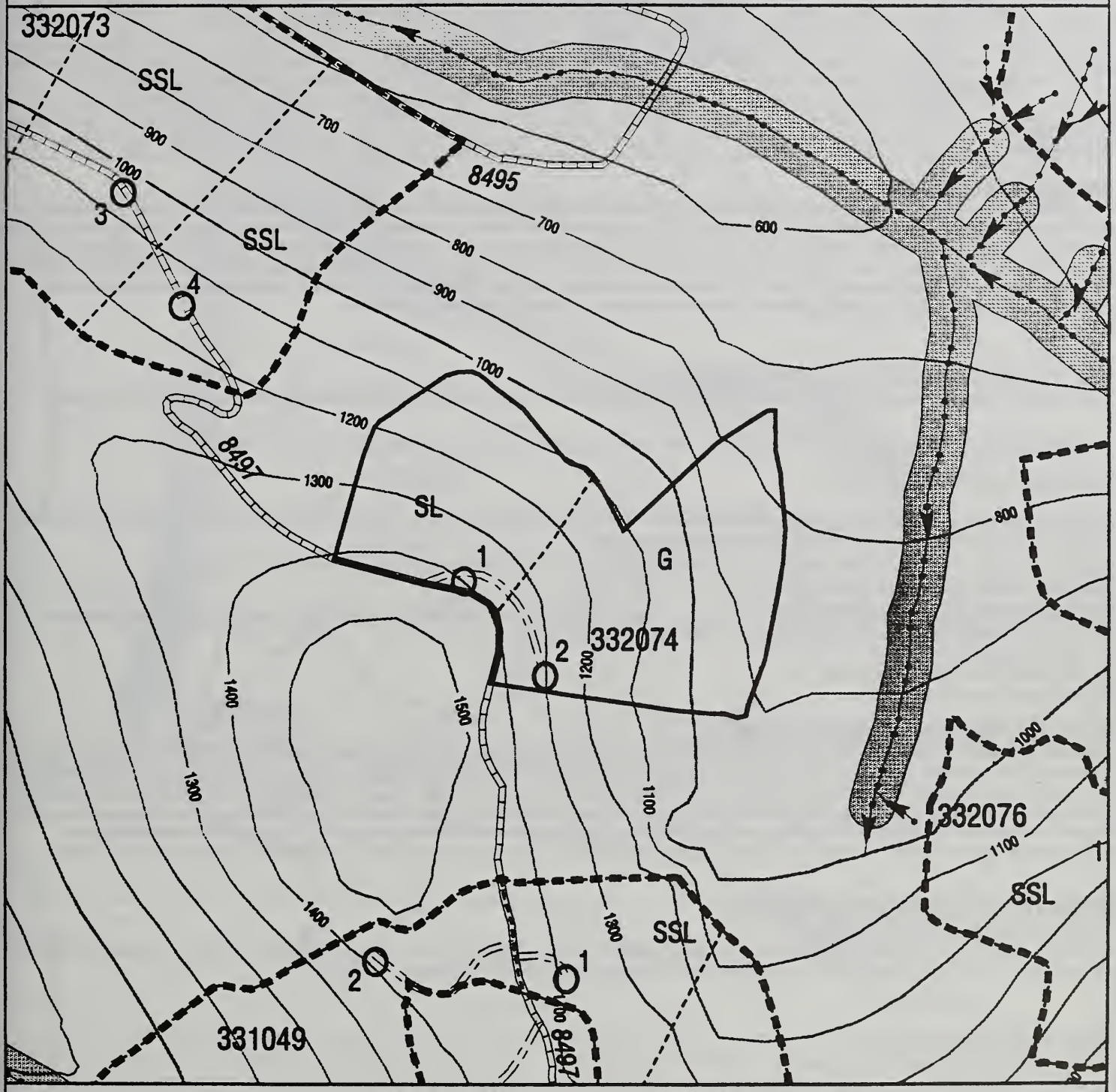
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332074 ALTERNATIVE(S): B C E

ACRES: 40.51 TOTAL NET MBF: 751.1 QUAD(S): SUM85 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 159



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332075	MAP #:	102	ACRES:	41
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-159
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	17	41%	HC-XC	230-430	45-mh	L	MP	-	M	M
VC-5	27.8	24	59%	MH-S	510-390	53-mh	M	M	-	M	M
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		41	100%	-	-	50	M	M	-	M	M

STAND CHARACTERISTICS

Mid to upper elevation stand, 60% mtn. hemlock and spruce series in VC5 and 40% western hemlock-yellow cedar and mixed conifer series in VC4. Sawtimber is medium to large with average defect; mortality is relatively high, especially in VC4. Some of the younger mature mtn. hemlock is still relatively vigorous. Stand structure is functionally even-aged in VC5 and uneven-aged in VC4; overstory age is 250+ years. Slopes are moderately steep to steep; soils are moderately well-drained in VC5 and moderate-to-poorly drained in VC4. Two large, deeply incised V-notch streams divide the unit roughly in halves (they merge in the center of the unit), with the main channel deleted from the unit. Other slope drainages are minor. Understory is a mixture of blueberry, rusty menziesia, devils club, and skunk cabbage. Some advanced conifer regeneration is present, scattered and in groups under canopy gaps; regeneration potential is moderate in VC5 and low in the mixed conifer stand.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Heavy partial cut is feasible. Cable yarding. Extensions through buffer required. Directional cutting away from buffers and V-notches required.

Visual Resource Management: VQO is Modification. Viewed from background of small boat route; oblique viewing angle - should meet VQO.

Soils / Geology: No special concerns identified.

Fisheries / Watershed: Class 2 stream on north boundary, well away from the edge of the unit, is not a concern. The large V-notch streams bisecting the unit will need buffer. This are would not be harvested. Yarding and felling is directed away from streams.

Wildlife: Retention of snags and green trees would add structural habitat diversity. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns identified.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting best meets resource objectives: (1) It converts the most of the unit to a more vigorous young stand. (2) About 90-95% of net volume available will be logged, contributing to the programmed harvest. (3) VQO of Modification will be met, since the area is not highly visible from the small boat route on Port Houghton. (4) Site quality will be maintained. Soil warming will increase decomposition rate and could increase productivity of the new stand. Although the general Rx is clearcutting, major reserve areas will be left in the stream buffers and V-notches . These reserve groups will provide structural diversity and ecological functions. Broad-scale even-aged management with reserve trees would not be operationally feasible nor needed to meet resource objectives. Group selection and sanitation salvage were not operationally feasible and were not considered in detailed analysis. Deferring treatment would not provide a timber yield and would not regenerate a relatively low impact unit with high regeneration priority.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The main configuration of the unit was dictated by timber type and logging systems layout. A major split along the north-south stream and V-notches essentially divides the unit into two sections. The buffer in this area and along the Class 2 stream in the north form the primary boundaries.

Soil, Water, and Wildlife Conservation:

BMP 13.3: TTRA Buffer on Class 2 stream required.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to benefit timber production.

MONITORING PLAN

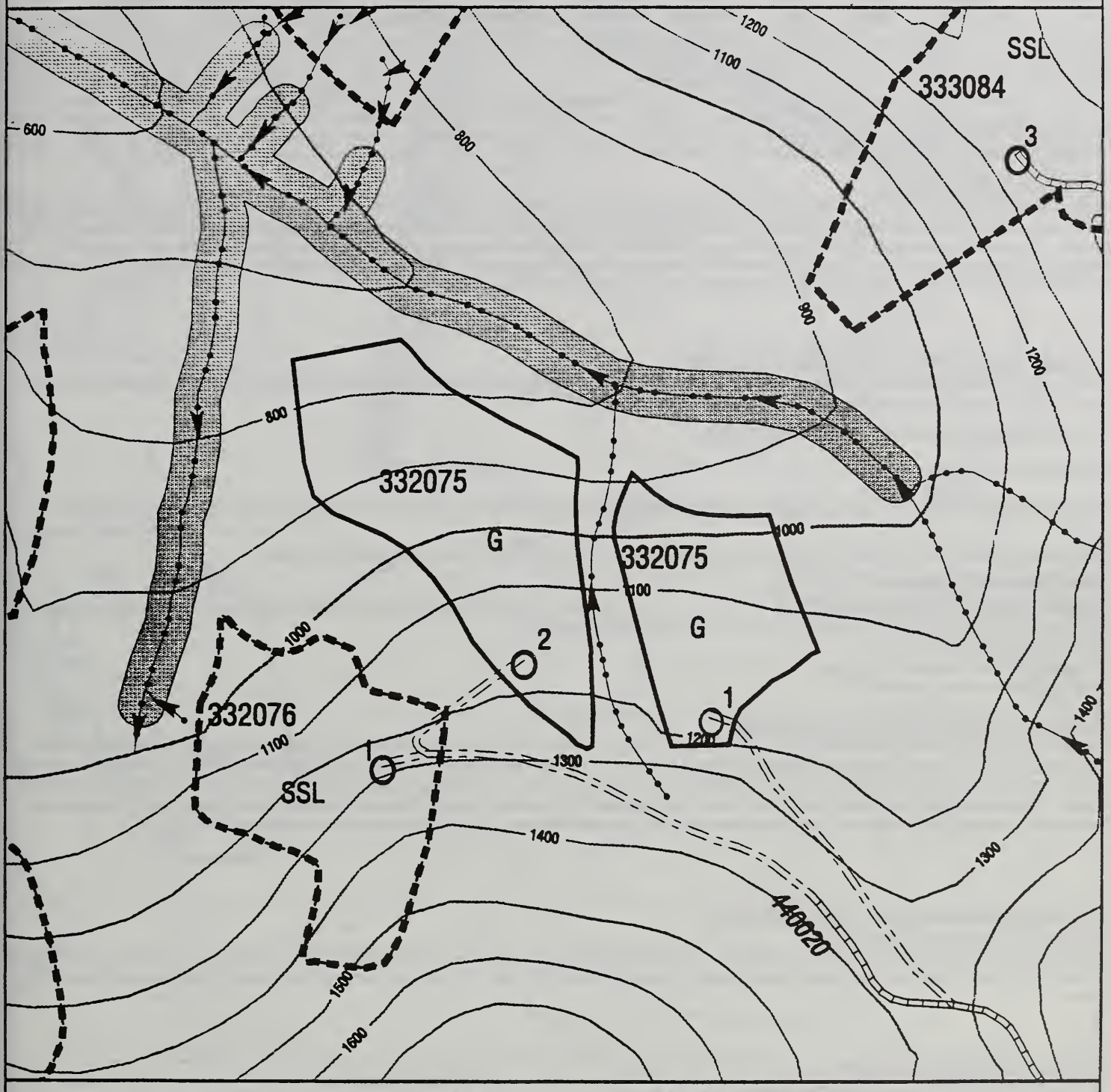
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332075 ALTERNATIVE(S): D

ACRES: 41.18 TOTAL NET MBF: 759.4 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 159



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332076	MAP #:	52	ACRES:	23
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-159
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	14	60%	HC-XC	220-430	43-mh	L	MP	-	M	M
VC-5	27.8	9	36%	MH-S	510-390	53-mh	L	M	-	M	M
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	1	3%	XC	430	35	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		23	100%	-	-	45	L	MP	-	M	M

STAND CHARACTERISTICS

Upper elevation stand, 60% western hemlock-yellow cedar and mixed conifer series in VC4 and 40% mtn. hemlock and spruce series in VC5; a small patch of low-site mixed conifer is included. Sawtimber is small in VC4 with high-to-average defect, and medium in VC5 with low defect. Mortality is average with snags scattered throughout. Stand structure is functionally even-aged with overstory age 250+ years. Lower slopes are moderate, upper slopes steep, with moderate-to-poorly drained soils. Three class 3 streams, including one V-notch, dissect the slopes. Understory is blueberry and rusty menziesia with common skunk cabbage, and deer cabbage indicating poorly-drained lower site areas. Advanced conifer regeneration is sparse; regeneration potential is moderate-to- low in mixed conifer.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Suitable for heavy partial cut. SW corner as originally laid out has few trees, difficult yarding. Recommended system is small slackline (50-70 ft. tower). Skyline extension throught buffer to west. 250 ft. of temporary road required.

Visual Resource Management: Not seen from small boat route.

Soils / Geology: No concerns.

Fisheries / Watershed: West boundary has Class 2 (fish bearing) stream that needs buffering. Original boundary of unit needed to be moved to accommodate buffer.

Wildlife: Retaining snags and green trees will provide structural habitat diversity. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The original boundary was modified from field reconnaissance. The western edge of the unit was drawn back to protect the buffered Class 2/Class 3 stream. The northern part of the unit conforms to a transition to low site and muskeg, as does a portion of the southern edge. The remaining boundaries follow logical timber types and logging system layout.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Unit boundary moved to avoid Class 2 stream.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to benefit timber production. Blowdown of reserve trees will create pit-and-mound microtopography, mixing organic and inorganic layers - a potential benefit to soil fertility and site productivity.

MONITORING PLAN

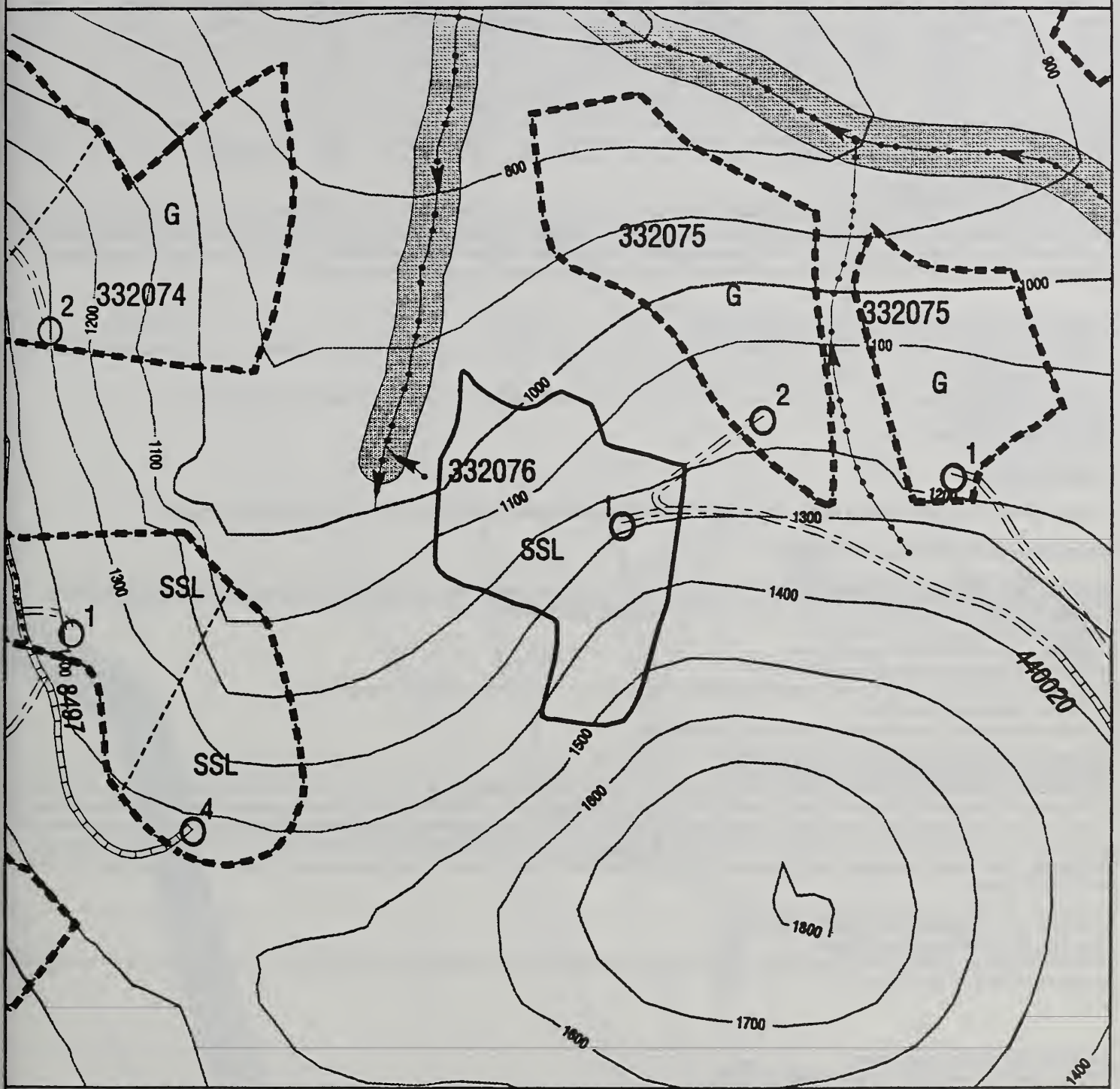
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 332076 ALTERNATIVE(S): D

ACRES: 23.33 TOTAL NET MBF: 358.8 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 158



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	890	UNIT #:	33301	MAP#	132	ACRES:	50
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	55			PHOTO #'S:	684-203
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	12.6	25%	XC	420-430	40	H	P	M	L	M
VC-5	24.2	37.7	75%	WH	130-110	50	H	MP	-	L	M
VC-6	37.5	-	-	-	-	-	-	-	-	-	-
VC-7	66.2	-	-	-	-	-	-	-	-	-	-
Low	6.4	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**50.3**	**100%**	-	-	**47**	**H**	**MP**	mistletoe	**L**	**M**

STAND CHARACTERISTICS

Mid elevation stand, 3/4 W. hemlock series in VC5, medium sawtimber with average defect and mortality, and 1/4 mixed conifer series in VC4, small sawtimber with very high defect and low mortality. Stand structure is uneven with overstory age 300+ years. Slopes are moderate with several small class 3 drainages and springs; soil drainage is poor and moderately poor. Understory is blueberry with skunk cabbage, 40-90% understory cover. Advanced conifer regeneration, mostly WH, is abundant in most of the unit, occupying 30-40% cover; regeneration potential is low to moderate. Windthrow and dwarf mistletoe are management concerns.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Heavy partial cut is not feasible. Suitable for small slackline and running skyline. Artificial anchors required. Six stations of temporary road will be needed, including 200ft. of full-bench construction. Snags are a management concern.

Visual Resource Management: Area is over a ridge to the southwest of the head of Sandborn Canal, and is not in the view of the small boat route.

Soils / Geology: No concerns noted.

Fisheries / Watershed:

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of understocked stand with a diseased, mature overstory for a programmed timber yield.
(2) Improve timber volume and value productivity.
(3) Minimize sediment yield to fish bearing streams.
(4) Mitigation of background visual impact on ferry route.
(5) Provide vertical structure and cavity nesting habitat within regeneration units where not in conflict with logging systems feasibility.
(6) Provide a programmed timber yield.
(7) Suspended log yarding - one end suspension on Class 3 streams in unit.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting and clearcutting with reserves, the selected alternatives, best meet the integrated resource objectives for this unit. Using a combination of these methods, the stand is efficiently regenerated, and mistletoe infection centers are reduced., Logging systems are operationally feasible for leaving scattered reserves, a reserve island on the muskeg, and feathered edges on the west boundary. Reserve trees will provide vertical structure and cavity nesting habitat for wildlife The prescribed methods also allow for protection of the Class 3 stream. Using a combination of methods also provides a side-by-side adaptive management comparison opportunity. Shelterwood with reserves, group selection, and sanitation salvage are less feasible operationally and economically. Deferring harvest would not provide a timber yield or regenerate a stand with fair to good potential productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundary location follows the edge of the productive timberland amid a mosaic of low-site and muskeg areas. After field review, the north portion of the unit was excluded due to low productivity and low volume.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Designate water quality protection needs.
BMP 13.9: Suspended log yarding - one end suspension on Class 3 streams in unit.
BMP 13.15: Wetland protection - designate muskeg island a protected wetland area.

Forest Productivity Activities:

Soil mixing from logging and windthrow of reserve trees, and soil warming from direct solar radiation, will increase biological activity, and thus, productivity. Reduction of dwarf mistletoe is expected to increase the growth rate of the new stand.

MONITORING PLAN

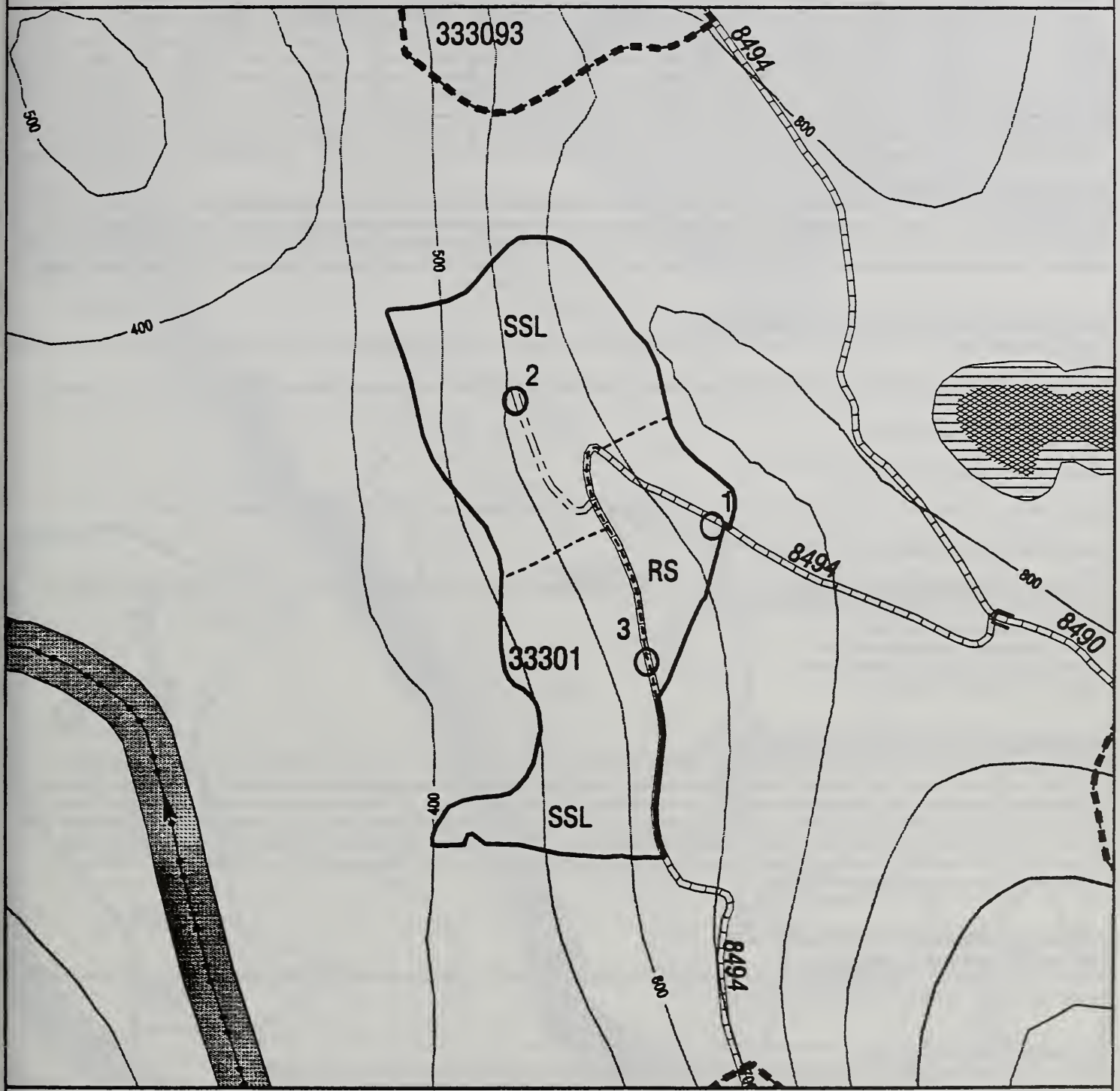
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT: 33301 ALTERNATIVE(S): B C D E

ACRES: 50.89 TOTAL NET MBF: 984.6 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 204



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333077	MAP #:	34	ACRES:	49
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-171
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	32.8	67%	XC	220	45	L	MP	L	M	L
VC-5	26.4	16.5	33%	WH	130	65	L	MP	L	M	L
VC-6	37.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		49.3	100%	-	-	52	L	MP	mistletoe	M	L

STAND CHARACTERISTICS

Low elevation stand on the toe of a small ridge above Port Houghton. Slopes are moderate, with westerly aspects. This moderately-stocked stand is classed as a low productivity mixed conifer-western hemlock series. Plant associations include the western hemlock-yellow cedar/ blueberry types. Overstory ages generally exceed 300 years. Stand structure is functionally even-aged. Stocking is predominantly western hemlock, with about one-third yellow cedar. Some of the hemlock is infected with dwarf mistletoe. Although the stand is close to saltwater, windthrow potential is low to moderate. Soils are poorly-drained, especially in flatter areas, which tend toward muskeg.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: The area is suitable for partial cutting. Snags are a safety concern. Skyline yarding. Multiple stump anchors required. Ten-station temporary road required.

Visual Resource Management: VQO is classed as Modification as viewed in the background from the small boat route. Orientation of the unit should provide screening.

Soils / Geology: No concerns noted.

Fisheries / Watershed: No streams in the unit; no concerns.

Wildlife: Leaving snags and green trees would provide vertical structural habitat. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting, the selected alternative, best meets the integrated resource objectives for this unit: (1) It converts the area to a more vigorous, young stand, and provides opportunity to reduce the level of dwarf mistletoe infection. (2) Most of the net volume will be logged, contributing to the programmed harvest. (3) The location of the unit, screening from the small boat route, and retention of occasional live trees will result in a VQO of Modification. (4) Despite the general unsuitability of the area for partial cutting, it will be possible to retain some green trees for wildlife habitats. (5) Site quality will be maintained or enhanced, primarily from increased biological functioning in the soil. In this stand, shelterwood with reserves, selection, and sanitation/salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low resource impact unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundary was designed to exclude low volume areas and to conform to logical logging limits. The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity. Reduction of dwarf mistletoe will increase the productivity of the regenerated stand.

MONITORING PLAN

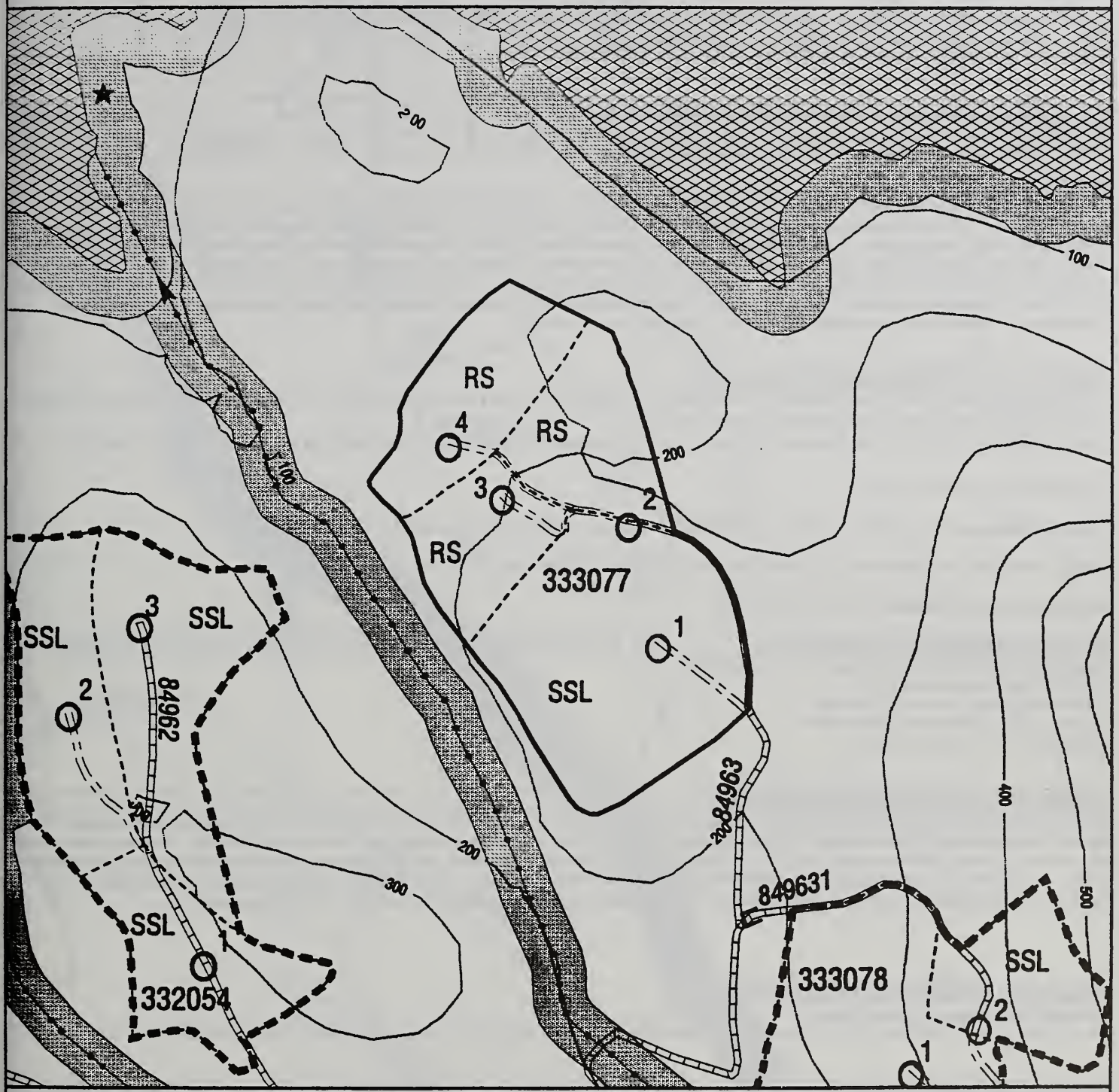
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333077 ALTERNATIVE(S): E

ACRES: 49.32 TOTAL NET MBF: 756.2 QUAD(S): SUM84 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 171



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333078	MAP #:	72	ACRES:	37
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-171
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	20.1	54%	XC	110-120	45	L	MP	L	M	L
VC-5	26.4	17.1	46%	WH	110-120	50	L	MP	M	M	L
VC-6	37.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		37.2	100%	-	-	47	L	MP	mistletoe	M	L

STAND CHARACTERISTICS

Low elevation stand on the west side of a small ridge above Port Houghton, upridge from Unit 333077. Slopes are moderate to steep, with west to southwest aspects. Soils are relatively stable. The stand is uneven-aged old-growth type throughout. Windthrow potential is low. Overstory ages generally exceed 300 years, with the lower stand strata ranging from old, overtopped trees to saplings and seedlings that established in gaps. Species composition is distinctly separated into two forest types : (1) Western Hemlock (VC5), with hemlock and Sitka spruce; and (2) mixed conifer (VC4), with hemlock and yellow cedar. . uneven-a . and is a mixture of classed as a low productivity mixed conifer-western hemlock series. Plant associations range from western hemlock/blueberry to hemlock/blueberry-rusty menziesia. Some of the hemlock is infected with dwarf mistletoe. Regeneration potential is moderate on the steeper ground typified by VC5, with some of the better-drained soils. In the mixed conifer areas, which are somewhat flatter, soils are more poorly drained, and regeneration potential tends to be low.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: The area is not suitable for partial cutting. Snag retention constitutes a safety hazard. Skyline. Guyline extensions req'd on one landing. Skyline must be rigged thru buffer. Tail trees req'd. Multiple stump anchors.

Visual Resource Management: VQO is modification, as viewed in the background from the small boat route. Orientation of the unit tends to screen it from direct view.

Soils / Geology: No concerns identified.

Fisheries / Watershed: High-quality Class 1 stream outside the unit, on the western side, needs to be protected. Buffer has been established.

Wildlife: Leaving snags and green trees would provide vertical structural habitat. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The southwest boundary of the unit conforms to the edge of the buffered Class 1 stream. Other unit boundaries conform to logical logging limits and type boundaries.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems.
BMP 13.3: Unit boundary is maintained at least 100' from Class-I stream.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity. Reduction of dwarf mistletoe will increase the productivity of the regenerated stand.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333078 ALTERNATIVE(S): E

ACRES: 37.24 TOTAL NET MBF: 627.7 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 171



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333079	MAP #:	48	ACRES:	28
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-185
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	5.4	19%	WH-HC	120-220	45	L	P	L	M	L
VC-5	26.4	18.1	64%	WH-HC	120-220	55	L	MP	L	M	L
VC-6	37.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	4.6	16%	-	410	0	L	P	L	-	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		28.1	100%	-	-	44	L	P	mistletoe	M	L

STAND CHARACTERISTICS

Medium elevation stand on the west side of a small ridge above Sandborn Canal. Slopes are moderate, with westerly aspect. Soils are relatively stable. The stand is uneven-aged old-growth type, a mosaic of western hemlock, hemlock-yellow cedar, and mixed conifer, with an inclusion of low site. Windthrow and mass failure potential are low. Overstory ages generally exceed 300 years, with the lower stand strata ranging from old, overtopped trees to saplings and seedlings that established in gaps. Species composition is predominantly western hemlock, with a substantial component of yellow cedar. Plant associations range from western hemlock/blueberry/shield fern to western hemlock-yellow cedar/blueberry/skunk cabbage. Some of the hemlock is infected with dwarf mistletoe, and red belt fungus is common. Regeneration potential is moderate, but neither yellow cedar nor Sitka spruce are regenerating well under present stand conditions.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: The area is not suitable for partial cutting. Snag retention constitutes a safety hazard. Skyline. Complex landing anchors, skyline extensions beyond unit bdrys. required. Nine station temp. road req'd.

Visual Resource Management: VQO is Modification, as viewed in the background of the small boat route. Cumulative effects from multiple-unit harvesting could result in lower VQO, unless harvest is modified. Mitigation potential to drop part of unit, retain trees, include snags.

Soils / Geology: No concerns were identified.

Fisheries / Watershed: No streams in unit. No concerns.

Wildlife: Leaving snags and green trees would provide vertical structural habitat. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No. concerns identified.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting is the selected alternative for the stand, except for the low site area, which will not be harvested. Clearcutting best meets the integrated resource objectives for this unit: (1) It converts the area to a more vigorous, young stand, and provides opportunity to reduce the level of dwarf mistletoe infection. (2) Most of the net volume will be logged, contributing to the programmed harvest. (3) The location of the unit, retention of the low site area, and retention of occasional live trees will result in a VQO of Modification. (4) Despite the general unsuitability of the area for partial cutting, it will be possible to retain some green trees for wildlife habitats. (5) Site quality will be maintained or enhanced, primarily from increased biological functioning in the soil. In this stand, shelterwood with reserves, selection, and sanitation/salvage are of questionable engineering feasibility without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low resource impact unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Boundaries were determined from stand (timber type) edges, logical harvest settings, and to exclude steep and/or unstable slopes.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity. Reduction of dwarf mistletoe will increase the productivity of the regenerated stand.

MONITORING PLAN

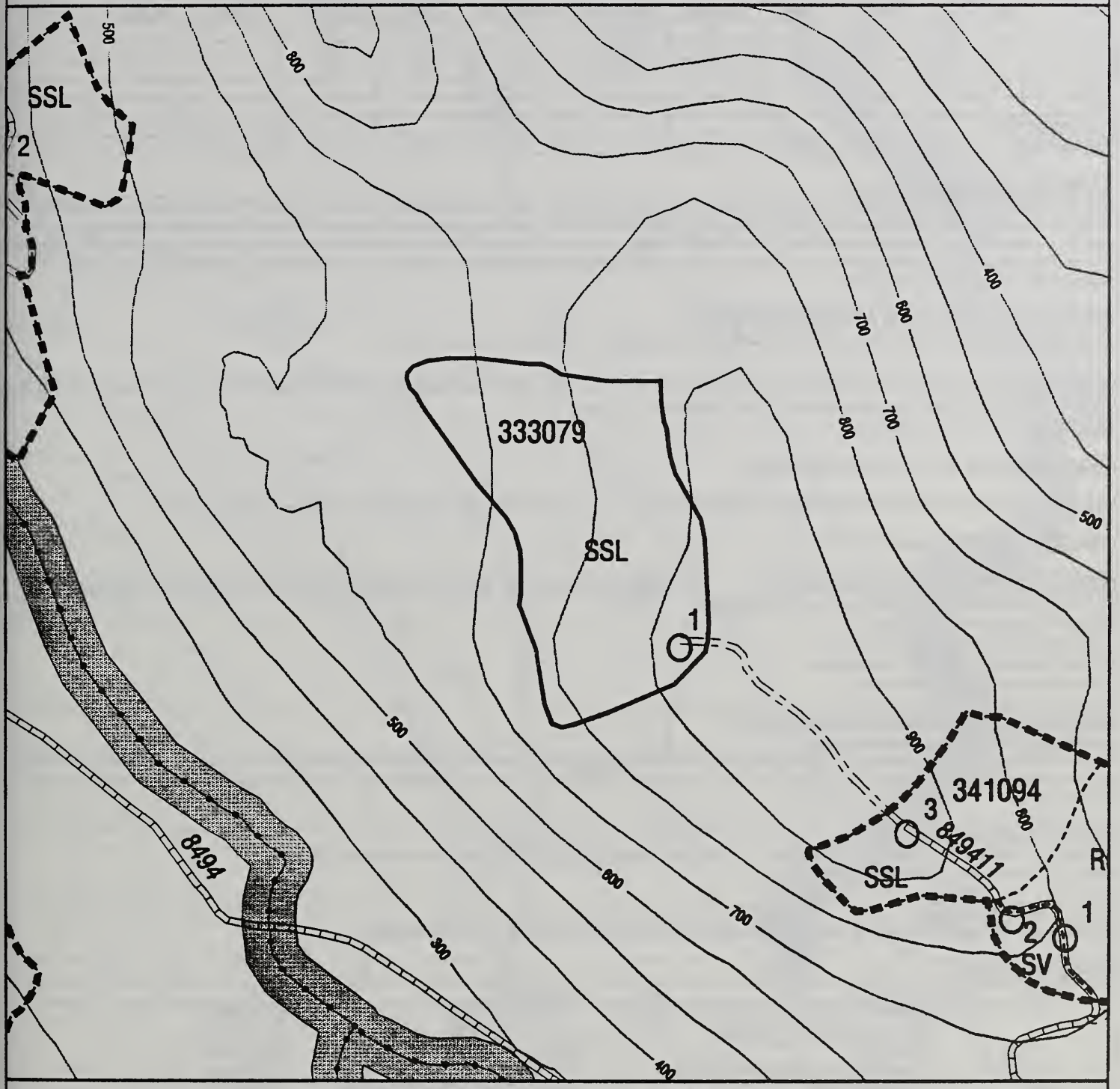
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333079 ALTERNATIVE(S): E

ACRES: 28.15 TOTAL NET MBF: 494.7 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 185



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:27:44.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333081	MAP #:	81	ACRES:	76
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	28			PHOTO #'S:	684-172
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potentlal L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	66.2	87%	XC	420-431	45	M	P	-	L	L
VC-5	26.4	1.8	2%	XC	420-431	52	M	MP	-	L	L
VC-6	37.9	7.7	10%	XC	420-431	60	M	M	-	L	L
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		75.7	100%	-	-	47	M	P	-	L	L

STAND CHARACTERISTICS

Medium elevation stand on the east side of a ridge one drainage to the west of Sandborn Canal. Slopes are gentle, and soils are stable. The stand is an uneven-aged mixed conifer old-growth type, with a small inclusion of low site. Windthrow potential is moderate. Overstory ages generally exceed 300 years, with the lower stand strata ranging from old, overtopped trees to saplings and seedlings that established in gaps. Species composition is predominantly western hemlock and mountain hemlock, with a substantial component of yellow cedar and Sitka spruce. Plant associations range from mixed conifer/blueberry/skunk cabbage to mixed conifer/blueberry/deer cabbage. Regeneration potential is low for spruce and yellow cedar.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is suitable for heavy partial cut in east part of unit. Multiple stump anchors req'd.

Visual Resource Management: VQO is Modification as viewed from the small boat route. Although cumulative effects of harvesting multiple units is a concern, this unit is of lesser concern, due to partial screening from topography and adjacent stands of timber.

Soils / Geology: No concerns were noted.

Fisheries / Watershed: No fish-bearing stream on the site.

Wildlife: Leaving snags and green trees will provide vertical structural habitat. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit follows logical harvest system layout and timber types. Lower elevation boundaries, located on the eastern side of the unit, tie into a transition to low site and muskeg, the more poorly-drained areas with lower productivity. The original northwest extension to the unit was dropped after field review and analysis, resulting in a lower impact on visual quality.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity.

MONITORING PLAN

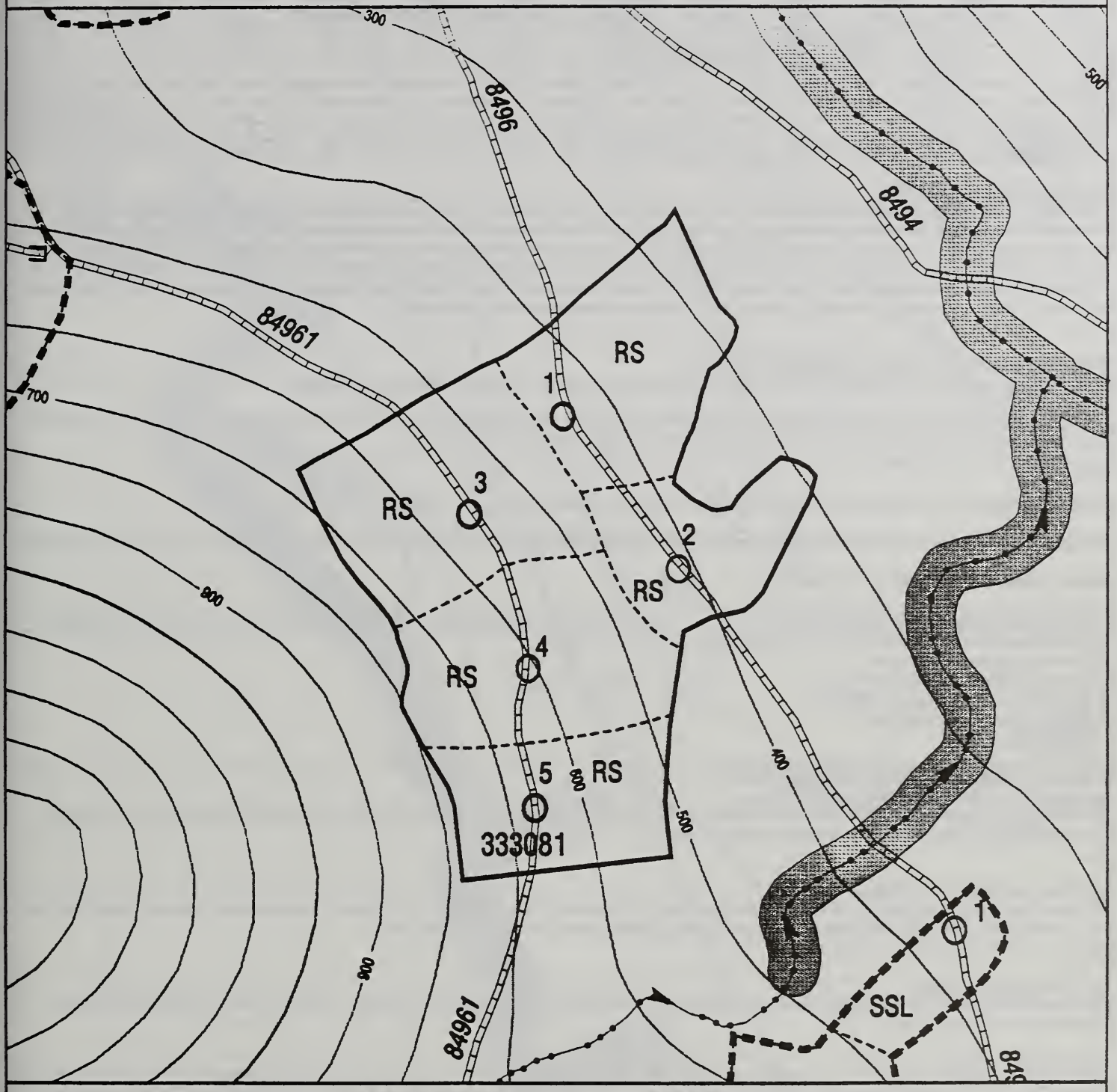
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333081 ALTERNATIVE(S): B C D E

ACRES: 75.64 TOTAL NET MBF: 1045 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 208



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:48:18.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333082	MAP #:	71	ACRES:	55
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-184
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	8.4	15%	WH	130-110	50	M	M	M	M	M
VC-5	26.4	46.2	85%	WH	130-110	60	M	M	M	M	M
VC-6	37.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		54.6	100%	-	-	58	M	M	mistletoe	M	M

STAND CHARACTERISTICS

Lower elevation, west-facing western hemlock stand on the side of a ridge, west of Sandborn Canal. Slopes are moderately steep, but occasionally in excess of 100%. Windthrow and mass failure potential are moderate over most of the stand, but increase on steeper slopes. The main stand is two-storied, VC5, with overstory ages exceeding 350 years and a lower stratum that established in localized windthrow gaps. These gaps are well-stocked with trees in a variety of ages classes. Species composition of the stand is predominantly western hemlock, with a substantial component of Sitka spruce. Two small VC4 areas are found near the stand boundaries at transitions to low site. Plant associations are predominantly western hemlock/blueberry/skunk cabbage and western hemlock/blueberry. Some of the hemlock is infected with dwarf mistletoe, and red belt fungus is common. Regeneration potential is moderate, and Sitka spruce is regenerating well in some areas.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is suitable for heavy partial cut, particularly in east part of unit. Skyline. Tailholds in stream buffer.

Visual Resource Management: VQO is Modification as viewed from the small boat route. Although cumulative effects of harvesting multiple units is a concern, this unit is of lesser concern, due to partial screening from topography (oblique view) and adjacent stands of timber.

Soils / Geology: No concerns noted.

Fisheries / Watershed: Unit moved away from Class I and Class II streams to provide for buffers.

Wildlife: Retention of snags and reserve trees will have benefit to wildlife, creating structural diversity. Some opportunities will be used in this unit to retain vertical structures.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The western and southern boundaries follow the buffer of the Class 2/3 stream(s). Boundaries on both the south and east were located in transitions from VC4 to low site. Other unit boundaries conform to logical logging limits and timber types.

Soil, Water, and Wildlife Conservation:

For the most part, the soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems. However, the steep area (generally those in excess of 70%) could be susceptible to mass movement. Retain understory on these areas.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity. Reduction of dwarf mistletoe will increase the productivity of the regenerated stand.

MONITORING PLAN

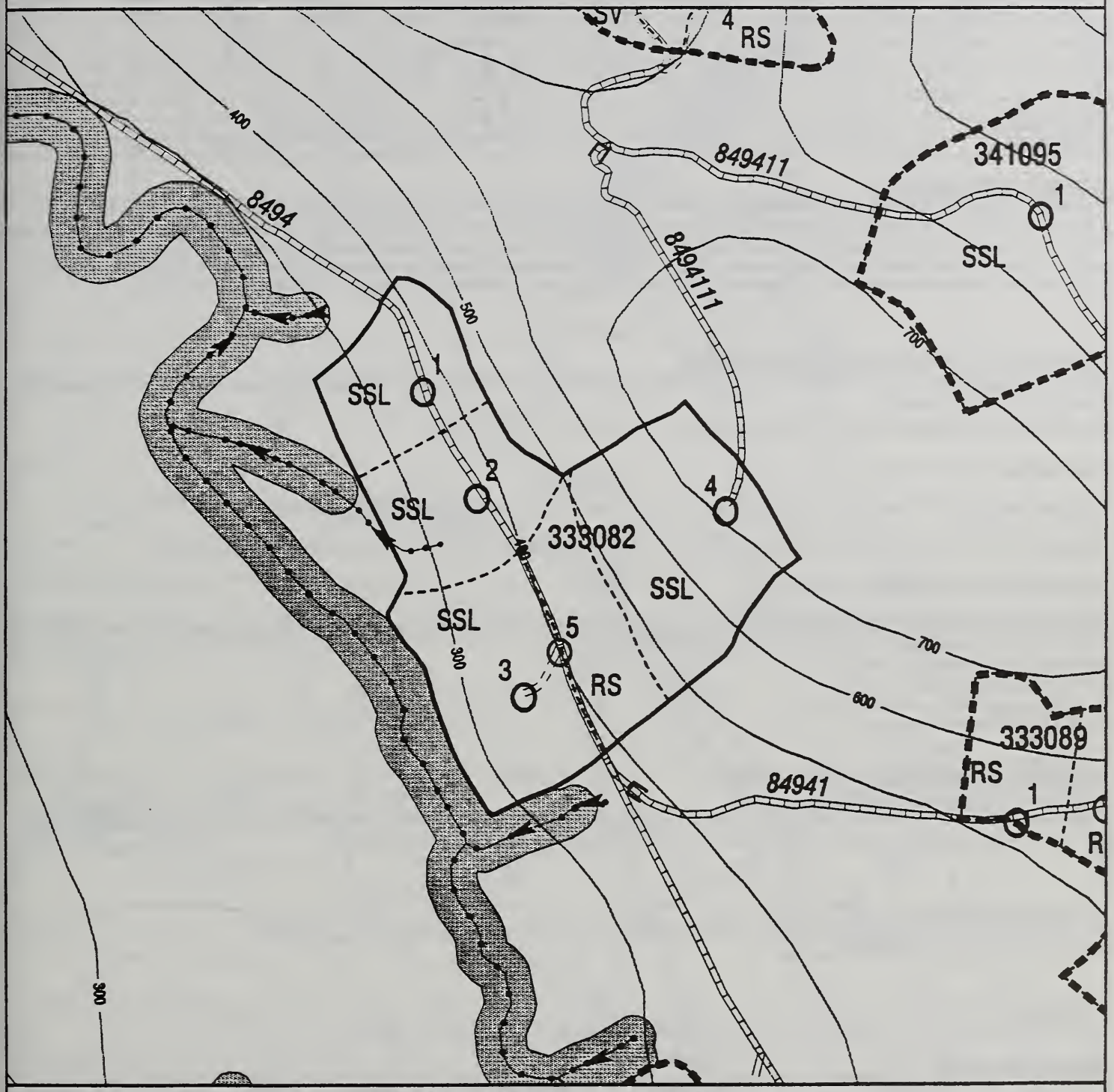
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333082 ALTERNATIVE(S): B C D E SETTING #(S). 4 EXCLUDED IN ALT(S). B C D

MAXIMUM ACRES: 54.66 TOTAL NET MBF: 1177.2 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 184



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.18:46:07.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333083	MAP #:	76	ACRES:	73
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-173
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	-	-	-	-	-	-	-	-	-	-
VC-5	26.4	73.0	100%	WH-XC	410-130	50	M	P	M	M	M
VC-6	37.9	0.1	0%	WH-XC	410-130	60	M	P	M	M	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		73.1	100%	-	-	50	M	P	red belt	M	M

STAND CHARACTERISTICS

A moderately-sloping mid-elevation stand extending from upper third to toe-slope, west of Sandborn Canal. Susceptibility to disturbance from wind or mass wasting is moderate. The stand is an uneven-aged composite of western hemlock and mixed conifer forest series. Overstory ages exceed 200 years, with the lower stand strata ranging from old, overtopped trees to saplings and seedlings that established in gaps. Species composition is predominantly western hemlock and mountain hemlock, with low stocking of yellow cedar and Sitka spruce. Plant associations range from mixed conifer/blueberry to western hemlock/blueberry/skunk cabbage. Regeneration potential is moderately good. Water table appears to be high, especially on flatter slopes. Many of the trees are defective, mostly due to red belt fungus and breakage.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is suitable for heavy partial cut. Snag retention creates human safety hazard during logging and subsequent operations. Rig skyline thru stream buffer. 1 sta. temp. road req'd.

Visual Resource Management: VQO is modification as viewed from the small boat route in Port Houghton.

Soils / Geology: No concerns noted.

Fisheries / Watershed: The Class III/Class II stream along the northwest boundary requires buffering (done during reconnaissance).

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The northwest boundary of the unit follows a type change to low site as well as the buffer along the Class 2 stream in the northernmost corner. The northeast portion of the unit was also established along a low-site boundary. Other boundaries conform to logical logging limits and timber types.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems.
BMP 18.1: Reserve trees maintain habitat structure.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity.

MONITORING PLAN

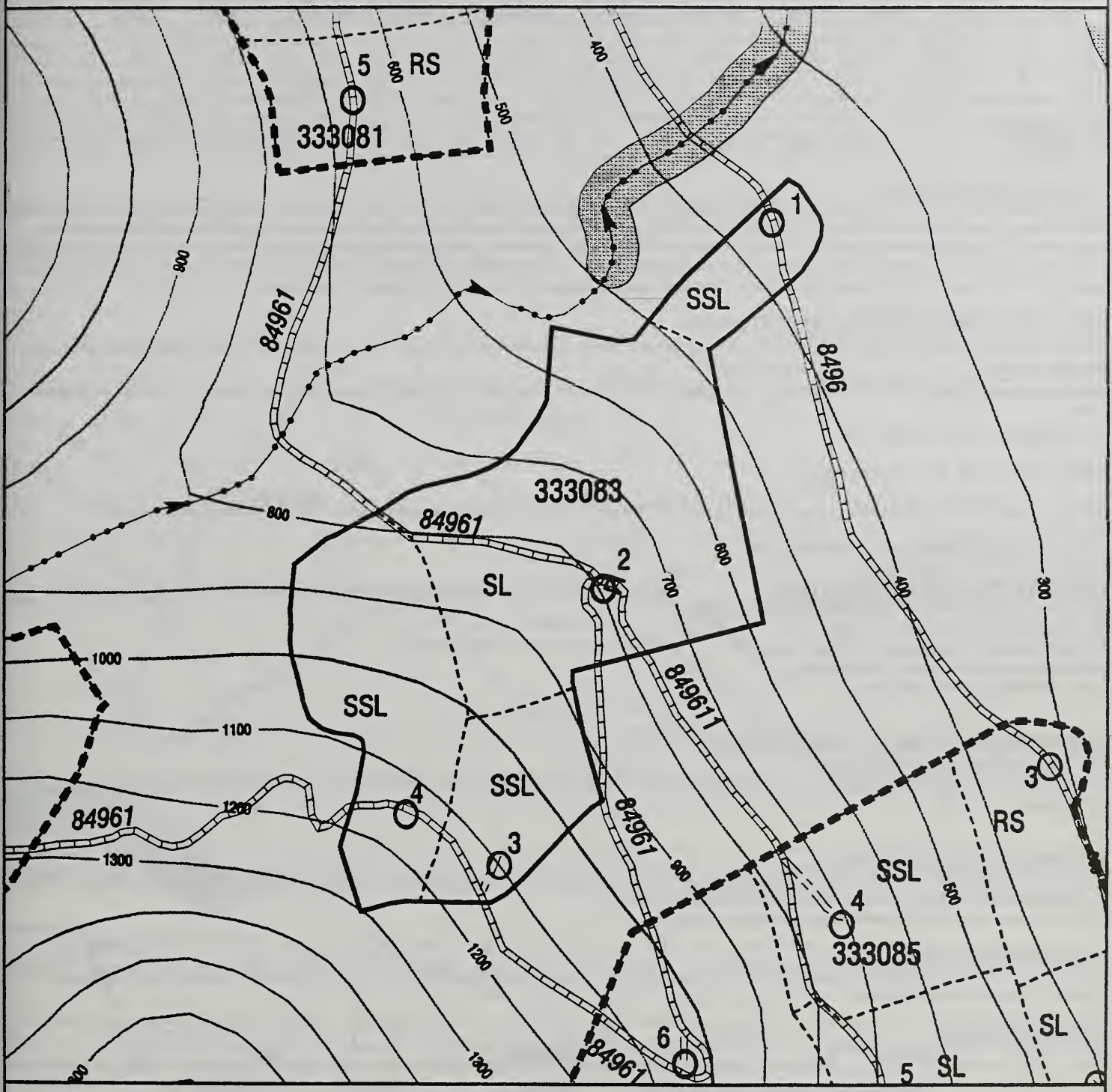
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333083 ALTERNATIVE(S): B C D E SETTING #(S). 2 3 4 EXCLUDED IN ALT(S). C

MAXIMUM ACRES: 73.08 TOTAL NET MBF: 1710.8 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 173



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.18:33:12.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333084	MAP #:	90	ACRES:	83
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-174
						ALTERNATIVE(S):	B,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	-	-	-	-	-	-	-	-	-	-
VC-5	26.4	82.7	100%	MC	420-410	60	M	P	M	M	H
VC-6	37.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		82.7	100%	-	-	60	M	P	conk	M	H

STAND CHARACTERISTICS

A moderately-sloping mid-to-upper elevation stand extending across a saddle in a ridge west of Sandborn Canal. High water table, numerous seeps and springs, and localized steep areas raise the potential for mass wasting. The stand is an uneven-aged mixed conifer forest series. Overstory ages exceed 200 years, with the lower stand strata ranging from old, overtopped trees to saplings and seedlings that established in gaps. Species composition is predominantly western hemlock, mountain hemlock, and yellow cedar, with low stocking of Sitka spruce. Most common plant associations are mixed conifer/blueberry/skunk cabbage and mixed conifer/blueberry. Regeneration potential is moderate for hemlock but low for yellow cedar and spruce. Principal damage agents are windthrow, snow breakage, and decay fungi.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Stand is suitable for heavy partial cut. Snags are safety concern/constraint. Skyline. Tailholds outside unit and in buffers. 4-station temp. road construction req'd.

Visual Resource Management: VQO is Modification. Most of the unit is not seen from midground or background of small boat route. Areas that are viewed are irregular in shape.

Soils / Geology: No concerns were noted.

Fisheries / Watershed: No fish-bearing streams.

Wildlife: Opportunities for retaining snags and green trees for structural habitat diversity. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The boundary of the unit was placed along the top of the slope break to prevent slope failure into the Class 3 stream. Other boundaries conform to logical logging limits and timber types.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems. Excessive disturbance will be avoided on steep slopes and V-notches, the areas most susceptible to mass movement.
BMP 13.5: Trees in V-notches preserved to protect sensitive areas.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production.

MONITORING PLAN

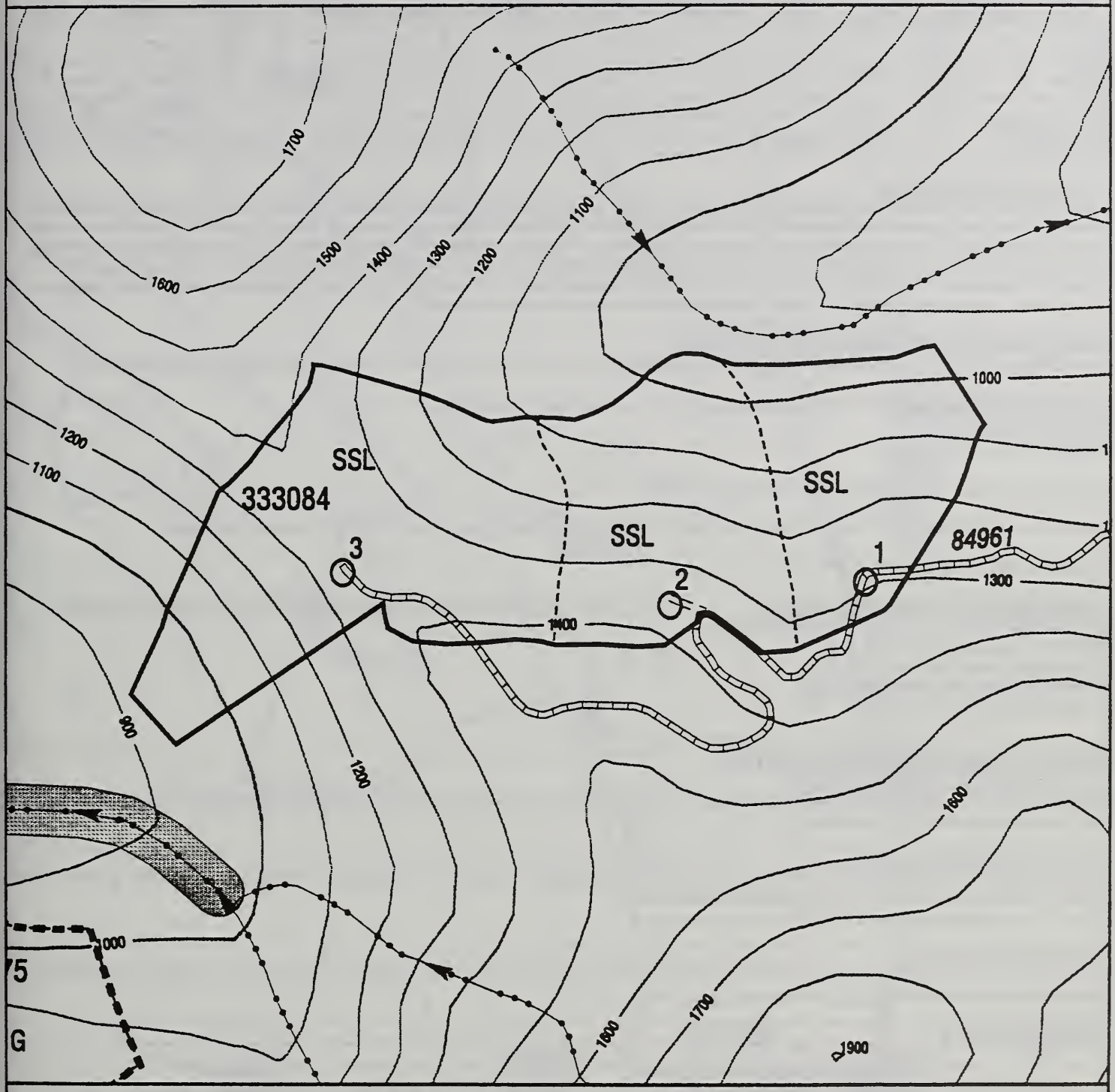
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333084 ALTERNATIVE(S): B D E

ACRES: 82.68 TOTAL NET MBF: 1935.1 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 174



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.21:25:12.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333085	MAP #:	91	ACRES:	74
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-183
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	23.1	31%	XC	440-420	50	M	P	M	L	M
VC-5	26.4	-	-	-	-	-	-	-	-	-	-
VC-6	37.9	49.4	67%	H	120-140	60	M	G	M	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	1.7	2%	XC	420-430	45	L	P	M	L	M
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		74.2	100%	-	-	56	M	M	conk	M	M

STAND CHARACTERISTICS

A moderately steep mid-elevation stand, extending from midslope to the toe of an east-facing ridge. Susceptibility to disturbance from wind or mass wasting is moderate. The stand is an uneven-aged composite, with western hemlock forest series in the more productive VC6 type, and mixed conifer in the VC4 and low site areas. Overstory ages exceed 300 years, with the lower stand strata ranging from old, overtopped trees to saplings and seedlings that established in gaps. Species composition is predominantly western hemlock, with minor components of mountain hemlock and Sitka spruce. Plant associations include western hemlock/blueberry/shield fern in VC6 and mixed conifer/skunk cabbage/lady fern in the VC4 areas. Regeneration potential is moderately good in VC6 and poor in other areas. Water table appears to be high, especially on flatter slopes in VC4 and low site. Much of the stand is defective, primarily due to red belt fungus and breakage.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is suitable for heavy partial cut. Snag retention creates human safety hazard during logging and subsequent operations. Skyline.

Visual Resource Management: VQO is modification as viewed from the small boat route in Port Houghton.

Soils / Geology: No concerns noted.

Fisheries / Watershed: Creek east of unit requires buffer which was done.

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Boundaries tie in with low site and muskeg transitions in the toe-slopes - the areas which are more poorly drained and boggy. Other boundaries conform with logical logging limits, timber type transitions, and stream buffers.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems. Excessive disturbance will be avoided on steep slopes and V-notches, the areas most susceptible to mass movement.
BMP 13.3: Unit boundary maintained at least 100' from Class-II streams.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production.

MONITORING PLAN

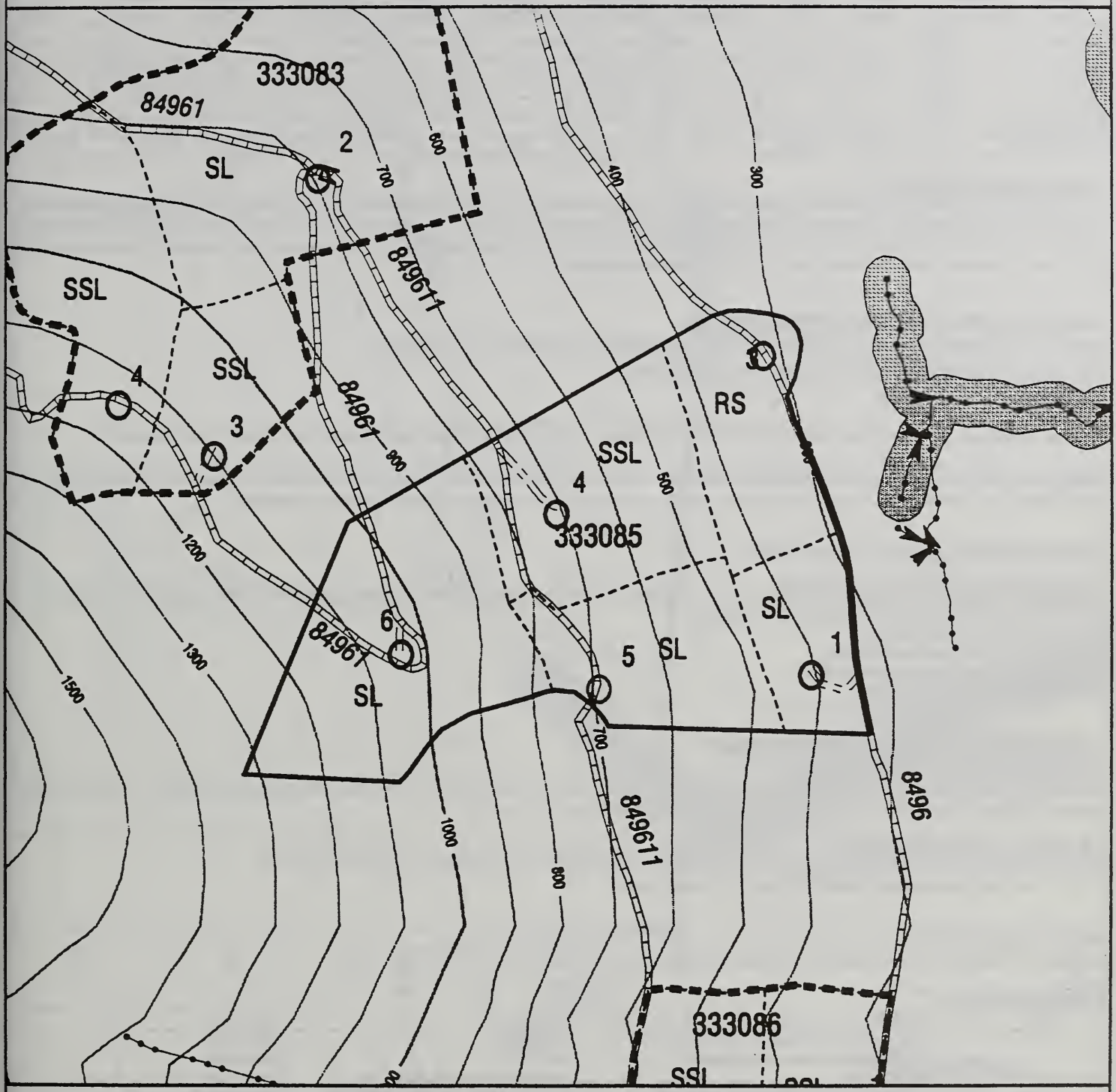
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333085 ALTERNATIVE(S): B C D E SETTING #(S). 4 5 6 EXCLUDED IN ALT(S). C

MAXIMUM ACRES: 74.23 TOTAL NET MBF: 1925.2 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 183



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP. ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333086	MAP #:	111	ACRES:	22
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-182
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	-	-	-	-	-	-	-	-	-	-
VC-5	26.4	-	-	-	-	-	-	-	-	-	-
VC-6	37.9	22.2	100%	H	120-140	60	H	M	H	H	L
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		22.2	100%	-	-	60	H	M	conk	H	L

STAND CHARACTERISTICS

A moderately steep low-elevation western hemlock stand, extending upwards from the toe-slope of an east-facing ridge. Soils are relatively stable, and susceptibility to mass wasting is moderate. Structurally, the stand is an uneven-aged composite in western hemlock VC6 type. Overstory trees are about 300 years old, with the lower stand strata ranging from old, overtopped trees to saplings and seedlings that established in gaps. Western hemlock/blueberry is the predominant plant association. Regeneration potential is high. Much of the stand is defective, primarily due to red belt fungus and breakage.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Snag retention would create human safety hazard for woods workers. Skyline logging.

Visual Resource Management: The area is not seen from the small boat route.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Buffering will be required to protect the stream on the south side of the unit. Steep slopes along the Class 3 stream require protection.

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Some opportunities will be used in this unit to retain vertical structure. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concerns listed.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Several boundary adjustments were made to protect streams and other resource values. The south boundary follows the buffer along the Class 2/Class 3 Stream. In addition, all boundaries follow the general type change that defines this overmature western hemlock stand.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems.
BMP 13.3: Unit boundaries configured at least 100' away from class-II stream.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333086 ALTERNATIVE(S): B C D E SETTING #(S). 2 EXCLUDED IN ALT(S). C

MAXIMUM ACRES: 22.18 TOTAL NET MBF: 746.1 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 182



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333087	MAP #:	89	ACRES:	7
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	54			PHOTO #'S:	684-183
						ALTERNATIVE(S):	B,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	7.1	100%	H	120-130	46	H	P	H	M	L
VC-5	26.4	-	-	-	-	-	-	-	-	-	-
VC-6	37.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**7.1**	**100%**	-	-	**46**	**H**	**P**	mistletoe	**M**	**L**

STAND CHARACTERISTICS

Lower elevation, west-facing western hemlock stand adjacent to a Class 1 stream. Slopes are gentle, and soil drainage is poor. Risk of windthrow is high, but mass failure potential is low. Structurally, the stand is an uneven-aged western hemlock VC4 type. Productivity is low, and the stand is characterized by short, small diameter western hemlock. Regeneration potential is medium. Much of the stand is defective, primarily due to red belt fungus and breakage.
Dwarf mistletoe infections are common in hemlock. Overstory trees are about 200 years old, with the lower stand strata ranging from old, overtopped trees to saplings and seedlings that established in gaps. Western hemlock/blueberry/shield fern is the predominant plant association.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is suitable for light partial cut. Snag retention would create human safety hazard for woods workers. Skyline yarding.

Visual Resource Management: The area is classed as VQO-Modification, as seen from the small boat route. Most of the stand is screened from view.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Class 1 stream on west boundary requires buffer. Class 2 streams on north and south boundaries also require buffering. (Buffer established during unit reconnaissance.)

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Shelterwood with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand. .
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

INTEGRATED MANAGEMENT PRESCRIPTION

The east boundary of the unit was located along a logical logging limit, with consideration for a timber type transition to low site. Remaining boundaries follow the edges of stream buffers.

Soil, Water, and Wildlife Conservation:

The soils are stable, and disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems. The prescription adequately provides for the protection of adjacent streams.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333087 ALTERNATIVE(S): B D E

ACRES: 7.09 TOTAL NET MBF: 80 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 183



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333088	MAP #:	97	ACRES:	65
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	29			PHOTO #'S:	684-183
						ALTERNATIVE(S):	B,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	21.9	34%	XC-H	110-130	45	H	MP	M	M	M
VC-5	26.4	40.2	62%	H	110-130	55	H	MP	M	M	M
VC-6	37.9	2.7	4%	H	110-130	60	H	MP	M	M	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**64.8**	**100%**	-	-	**52**	**H**	**MP**	-	**M**	**M**

STAND CHARACTERISTICS

Lower elevation, west-facing mixed stand of western hemlock, Sitka spruce, and yellow cedar adjacent to a Class 1 stream. Slopes are generally moderate, with occasional pitches exceeding 100%. Soil drainage is moderately poor, and there are numerous seeps and springs throughout the stand and within included muskegs. Risk of windthrow is high, especially in wet areas. The average mass failure potential is moderate, but increases on steep ground. Structurally, the stand is an uneven-aged western hemlock VC5&6 type, with about one-third of the stand in mixed conifer-VC4. Regeneration potential is medium. Much of the stand is defective, primarily due to red belt fungus and breakage. Overstory trees are highly variable in age and condition, often including trees from 200 to 500 years old. The lower stand strata range from old, overtopped trees to saplings and seedlings that established in gaps. Understory advance growth is highly variable in quality. Western hemlock/blueberry and western hemlock/blueberry/skunk cabbage are the predominant plant associations.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is not suitable for partial cutting. Snag retention is a safety problem for woods workers. Guyline extensions/deadmen required. Tailholds needed within stream buffer and outside unit. 18 stations of temporary roads required.

Visual Resource Management: VQO is Maximum Modification/Modification. Unit is viewed obliquely in far background from small boat route.

Soils / Geology: No concerns identified.

Fisheries / Watershed: Class 1 stream requires 120 ft. buffer. (established during stream survey and reconnaissance)

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Some opportunities will be used in this unit to retain vertical structure. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The western boundary of the unit borders a transition to low site and the buffer of the Class 1 stream. Other boundaries generally follow transitions to low site and other timber types, and have been adjusted to conform with logical logging limits.

Soil, Water, and Wildlife Conservation:

On moderate slopes, the soils are stable, and disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems. The prescription adequately provides for the protection of adjacent streams.
BMP 13.3: Unit configured to provide minimum100' buffer from Class-I stream.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333088 ALTERNATIVE(S): B D E

ACRES: 64.69 TOTAL NET MBF: 1276.4 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 29 ROLL NO.: 1088 PRINT NO.: 27



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333089	MAP #:	80	ACRES:	13
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	29			PHOTO #'S:	684-183
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	-	-	-	-	-	-	-	-	-	-
VC-5	26.4	0.2	2%	H	120-110	55	L	M	L	H	L
VC-6	37.9	12.7	98%	H	120-110	55	L	M	L	H	L
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		12.9	100%	-	-	55	L	M	-	H	L

STAND CHARACTERISTICS

This mixed stand of western hemlock, yellow cedar, and Sitka spruce lies astride a saddle on the ridge directly west of Sandborn Canal. Aspects vary on each side of the ridge. Slopes are also highly variable, with occasional pitches to 90%. Risk of windthrow is currently low, but could increase if winds constricted by the saddle are further accelerated by timber harvest pattern. The average mass failure potential is moderate, but increases on steep ground. Structurally, the stand is an uneven-aged western hemlock VC5&6 type. The predominant plant associations are western hemlock/blueberry/shield fern and western hemlock/blueberry. Regeneration potential is high. Overstory ages average about 300 years, but understory strata range from old, overtopped trees to saplings and seedlings that established in gaps. Much of the understory includes a healthy mature component, and pockets of good quality advance growth are common.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is not suitable for partial cut. Complex guyline anchors, tailtrees, and tailholds outside unit required.

Visual Resource Management: VQO is Modification. Unit is in seen area from Sandborn Canal.

Soils / Geology: No concerns noted.

Fisheries / Watershed: No concerns noted; no streams in unit.

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.
(6) Skyline logging, with two landings. Tail trees required at the top of the unit, and skyline extensions will be needed outside the unit to the south.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The general boundaries were established along logical yarding boundaries nad merchantability limits.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Numerous reserve trees will provide vertical habitats.

Forest Productivity Activities:

Windthrow mounds will provide opportunities for restoring or maintaining basic soil functions, particularly the mixing of organic and mineral strata. This is expected to help to maintain or increase soil productivity.

MONITORING PLAN

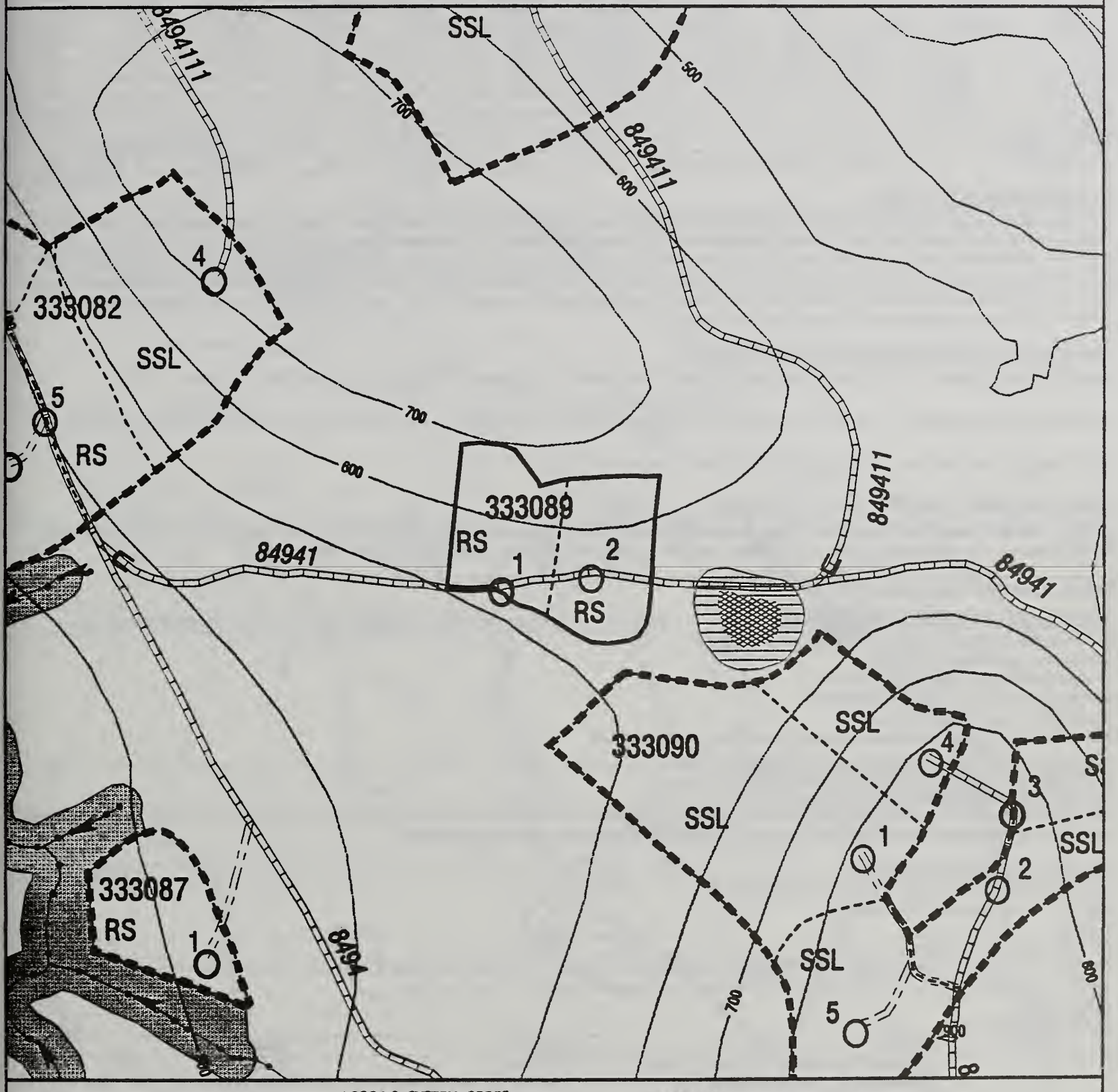
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333089 ALTERNATIVE(S): E

ACRES: 12.85 TOTAL NET MBF: 431 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 29 ROLL NO.: 1088 PRINT NO.: 26



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 83 | UNIT #: 333090 | MAP #: 84 | ACRES: 74

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	23.3	31%	H	110-120	40	M	M	H	M	M
VC-5	26.4	41.0	55%	H	110-140	50	M	M	M	H	M
VC-6	37.9	10.0	13%	H	110-120	60	M	G	M	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		74.3	100%	-	-	48	M	M	mistletoe	H	M

STAND CHARACTERISTICS

This mixed stand of western hemlock, yellow cedar, and Sitka spruce wraps around a ridge above a saddle directly west of Sandborn Canal. Aspects vary on each side of the ridge. Slopes are also highly variable, with occasional pitches to above 100%. Mass wasting hazard is low except on steeper slopes, some of which are excluded from the stand. Risk of windthrow is moderate. Structurally, the stand is an uneven-aged western hemlock VC4,5&6 type. Predominant plant associations include western hemlock/blueberry, western hemlock/blueberry/shield fern and western hemlock/blueberry-devil's club. Regeneration potential is high. Overstory ages commonly exceed 300 years, but understory strata range from old, overtopped trees to saplings and seedlings that established in gaps. Much of the understory includes a healthy mature component, and pockets of good quality advance growth are common.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline yarding. Some of unit is suitable for heavy partial cut. Temporary road construction required. Rock is available.

Visual Resource Management: The unit itself is seen in the background from Sandborn Canal. VQO is modification. Opportunity to screen view with foreground trees.

Soils / Geology: Steep areas are concern for mass wasting. (excluded from unit)

Fisheries / Watershed: Adjacent lake to the north is buffered.

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Some opportunities will be used in this unit to retain vertical structure. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.
(6) Skyline logging. Continuous landing along road needed on a portion of the unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Part of the northern boundary was located along a buffer protecting the small lake. An extremely steep area on the north was excluded, and the boundary was moved further south. Other unit boundaries followed general type changes, changes in timber condition, and logical yarding limits.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Numerous reserve trees will provide vertical habitats.
BMP 13.15: Unit configured to avoid lake.

Forest Productivity Activities:

Windthrow mounds will provide opportunities for restoring or maintaining basic soil functions, particularly the mixing of organic and mineral strata. This is expected to help to maintain or increase soil productivity. Reduction of mistletoe is expected to increase productivity of the new stand.

MONITORING PLAN

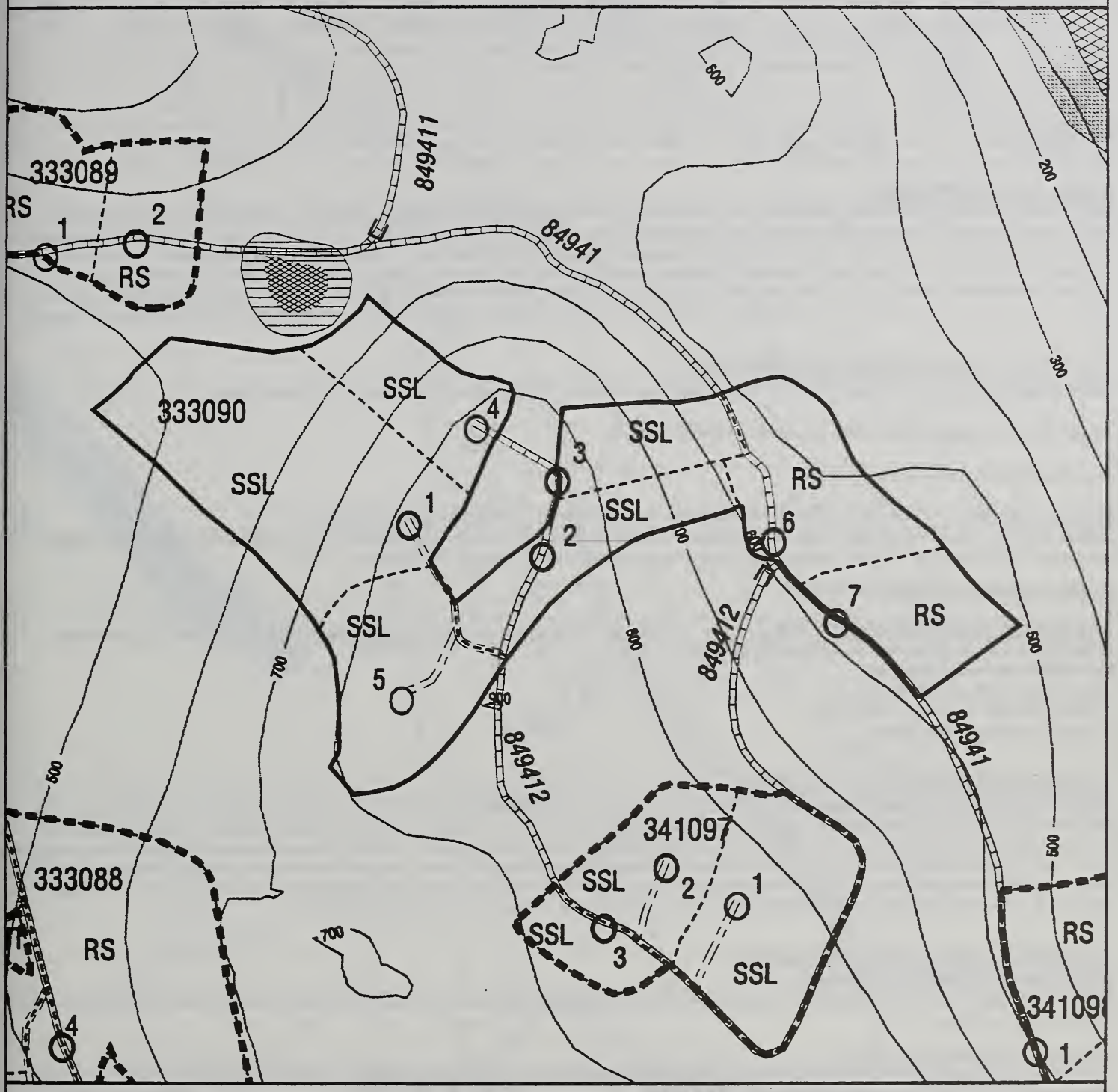
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 333090 ALTERNATIVE(S): E

ACRES: 74.33 TOTAL NET MBF: 1559 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 201



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	333093	MAP #:	117	ACRES:	56
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	55			PHOTO #'S:	684-203
						ALTERNATIVE(S):	B,C,D,E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.8	56.2	100%	HC-XC	420-220	50	H	P	M	M	L
VC-5	26.4	-	-	-	-	-	-	-	-	-	-
VC-6	37.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		56.2	100%	-	-	50	H	P	red belt	M	L

STAND CHARACTERISTICS

Lower elevation stand of western hemlock, Sitka spruce, and yellow cedar behind the ridge west of Sandborn Canal. Slopes are generally moderate, but cliffs were found during field reconnaissance. The mass failure potential is low. Soil drainage is poor on benches and shallow slopes. Risk of windthrow is high, due to poor vigor and condition of the trees, as well as high water table on portions of the stand. Structurally, the area is an uneven-aged western hemlock-yellow cedar composite with mixed conifer type, VC4. Regeneration potential is medium. Much of the stand is defective, primarily due to red belt fungus and breakage. Overstory trees are highly variable in age and condition, generally well in excess of 200 years old. The lower stand strata range from old, overtopped trees to saplings and seedlings that established in gaps. Understory advance growth is highly variable in quality. Plant associations include mixed conifer/blueberry/skunk cabbage and western hemlock-yellow cedar/blueberry/skunk cabbage.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Area is suitable for heavy partial cutting. Snag retention is a safety problem for woods workers. Tailtrees required.

Visual Resource Management: The area is not seen from the small boat route.

Soils / Geology: No concerns noted.

Fisheries / Watershed: The Class 2 and portions of the Class 3 streams require buffering. (done during field reconnaissance)

Wildlife: Snags and reserve trees provide vertical structure habitats for wildlife. Clearcut with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a more vigorous young stand.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Retain biological structures for wildlife habitat.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves is the selected alternative because: It contributes a high proportion of stand volume to the programmed harvest. Reserve tree selection provides defective hemlock, spruce, and yellow cedar for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, a source of blowdown for ecological functioning, and visual softening of harvest impacts. Logging systems feasibility is good for a heavy partial cut. Although clearcutting would result in increased yield and be more efficient for logging, it would not retain wildlife habitat quality as well as clearcutting with reserves. Shelterwood with reserves, selection, and sanitation salvage are of questionable engineering feasibility in this unit without shifting to helicopter yarding, poorer economic choices, and would not improve future timber productivity as efficiently as the selected alternative. Defer would not provide a timber yield and would not regenerate a relatively low impact unit.

INTEGRATED MANAGEMENT PRESCRIPTION

INTEGRATED MANAGEMENT PRESCRIPTION

Much of the northern boundary follows a transition to muskeg. The northwest edge follows the slope above the stream buffer. Other boundaries follow logical timber type and logging system boundaries.

Soil, Water, and Wildlife Conservation:

The soils are relatively stable. Disturbance from logging, as prescribed for site preparation, is not expected to create erosion problems. Excessive disturbance will be avoided on steep slopes and V-notches, the areas most susceptible to mass movement.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

Soil mixing from logging and soil warming from direct solar radiation will increase biological activity, and thus, productivity. Windthrow mounds from reserve trees that blow over will provide opportunities for restoring or maintaining basic soil functions, particularly the mixing of organic and mineral strata.

MONITORING PLAN

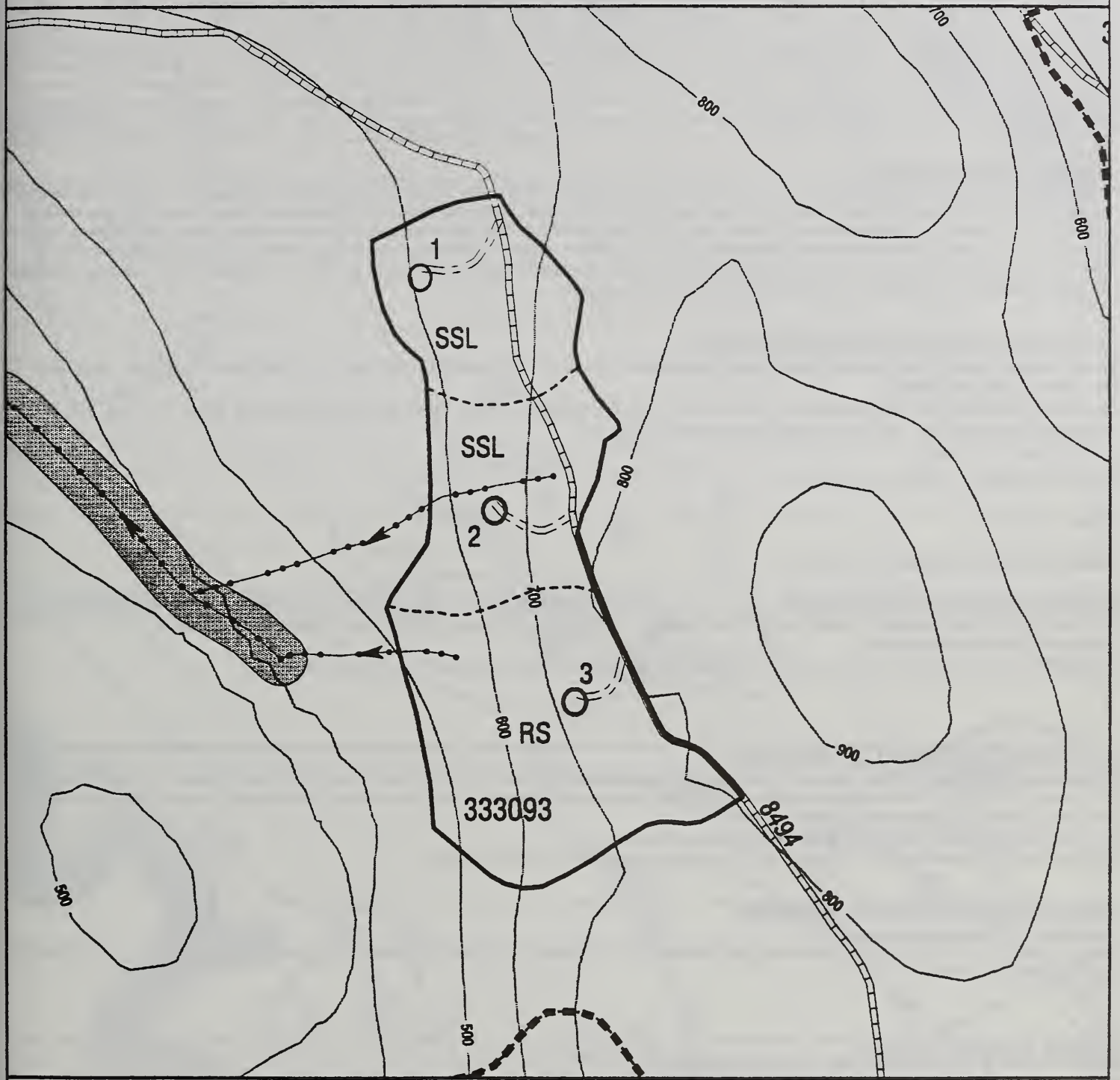
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT: 333093 ALTERNATIVE(S): B C D E

ACRES: 56.23 TOTAL NET MBF: 634.1 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 203



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341094 MAP #: 58 ACRES: 32

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 54 PHOTO #'S: 684-185 ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.2	22.3	70%	H-HC	220-210	50	M	M	M	M	M
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	9.4	30%	H	130-120	65	M	M	-	H	L
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		31.7	100%	-	-	54	M	M	Mistletoe	M	M

STAND CHARACTERISTICS

Mosaic of multiple storied and even age functional stands in the w. hemlock, w. hemlock/y. cedar series. This stand also has a trace of Sitka spruce, Y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 60% on aspects that are uneven NE slopes which are partially hidden from view in the Sandborn canal by two knobs along the NE portion of the unit. The southeastern portion of the unit is bounded by a ridgetop/muskeg. Overstory ages are 150 to 400 years old with high defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage, defoliators/ dead tops, windthrow. The understory is <20% stocked with 20 to 50 year-old w. hemlock which occur in groups throughout with poor to fair vigor. Ground cover is sparse to dense Vaccinium associated with rusty menziesia and some shield fern. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Four settings with running Skyline, small slackline, and shovel. Unit is suitable for heavy partial cut. Snag retention constitutes a safety issue. Four stations of temp. road required.

Visual Resource Management: VQO Modification. Viewed in the midground from the Sandborn canal. On site topography has depression @ lower 1/2 of unit. most of unit will be screened by foreground trees. only irregular edges visible should meet VQO.

Soils / Geology: No concerns.

Fisheries / Watershed: No streams. No concerns.

Wildlife: No concerns.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4& 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention with shelterwood and scalloping setting corners on the upper slopes.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) Provides a high sawlog volume return from a stand that is past its peak productivity.(2) Reserve individual trees (green cull) uniformly. This method to provide good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts. Individual reserves should be green culls, y. cedar or less common Sitka spruce when found.
Clearcut or clearcut with reserves would not mitigate wildlife and visual concerns.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit is bounded to the west by the main ridge between the Sandborn canal and 333 creek. To the south is a low site muskeg area. The eastern boundary is the logical limit of the proposed logging systems.

Soil, Water, and Wildlife Conservation:

BMP 12.17: Close off temp. spur roads. Waterbar and or seed as needed.
BMP 18.1: Maintain habitat structure with shelterwood and snag candidates.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

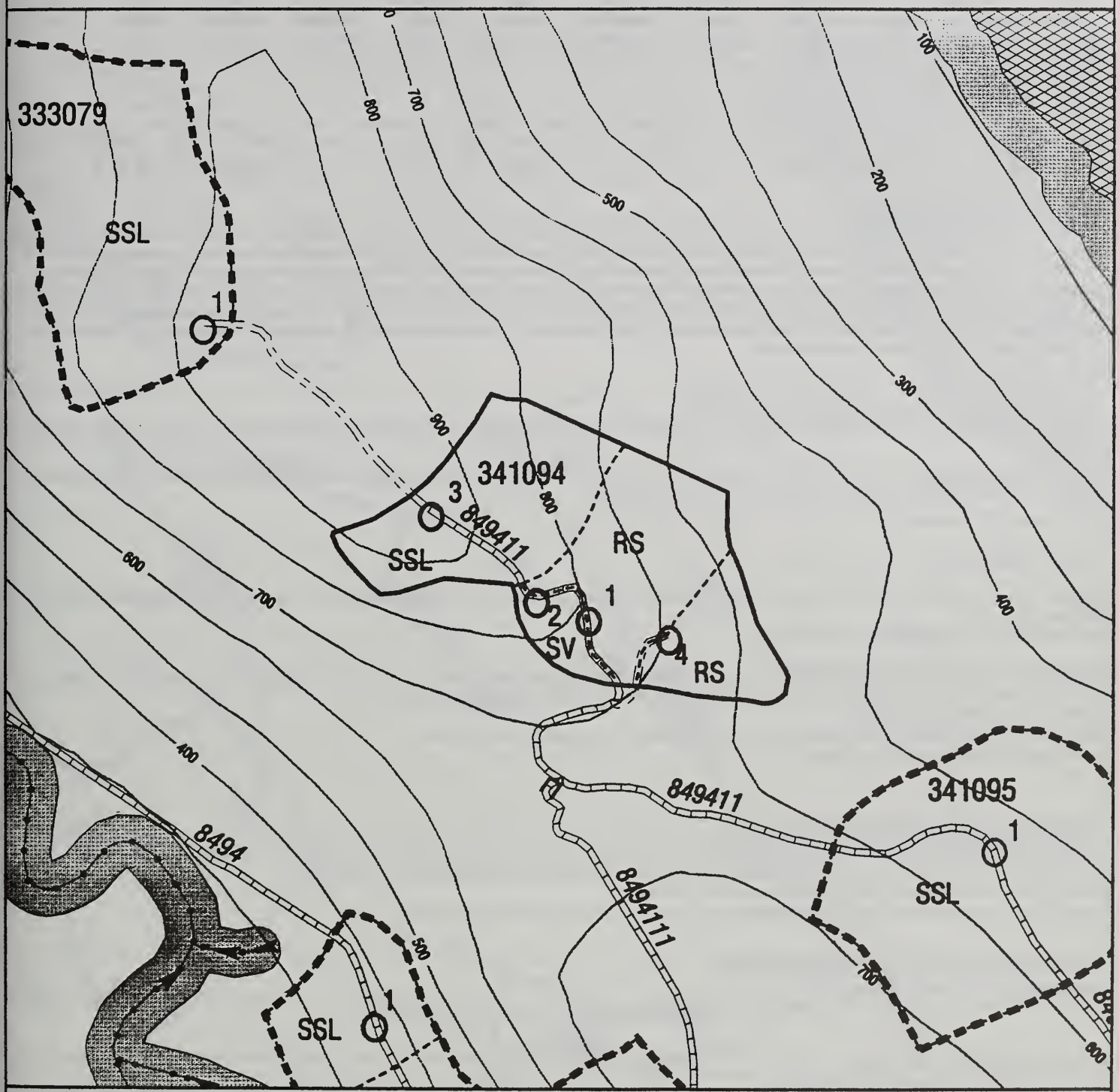
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341094 ALTERNATIVE(S): E

ACRES: 31.68 TOTAL NET MBF: 591.5 QUAD(S): SUM84 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 185



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 84 | UNIT #: 341095 | MAP #: 68 | ACRES: 32

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 54 | PHOTO #'S: 684-183 | ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	30.0	100%	H-XC	110-120	50	M	M	M	M	L
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	-	-	-	-	-	-	-	-	-	-
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		30.0	100%	-	-	50	M	M	Mistletoe	M	L

STAND CHARACTERISTICS

Mosaic stand in the w. hemlock, w. hemlock/y. cedar and mixed conifer series. This stand also has minor amounts of Sitka spruce in the overstory. The stand is composed of medium size, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 60% on NE aspects that is bisected by several small creeks in the east corner. The western portion of the unit is bounded by a ridgetop/muskeg. Overstory ages are 150 to 400 years old with high defect and significant amounts of mistletoe, mechanical/animal damage, defoliators and windthrow. The understory is 40-60% stocked with 20 to 50 year-old w. hemlock which occur in groups throughout with fair to excellent vigor. a significant pocket of reproduction is found in the northern corner of the unit. Ground cover is moderately dense Vaccinium associated with, skunk cabbage and shield fern. Significant old windthrow is abundant. Site is fair to good over the unit as a whole. The unit is well past its peak production and may be capable of producing volumes into VC 5 when managed.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Small slackline 70 foot tower. Require extensions beyond unit boundary. Not operationally suitable for partial cut. Snag retention may be a safety hazard.

Visual Resource Management: VQO Modification. Viewed in the midground from the Sandborn Canal. Foreground trees will screen leading edge. Upper boundaries irregular, with effective emulation of natural steep slopes. Should meet VQO.

Soils / Geology: No concerns.

Fisheries / Watershed: No fish in unit, no concerns.

Wildlife: Conducted goshawk survey no response. Recommend retaining live trees and snags to maintain habitat density. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 with diseased, mature overstory to a vigorous young stand.
(2) Provide for programmed timber yield.
(3) Mitigation of wildlife concerns by unit configuration and size combined with mitigation's in adjacent units.
(4) maintain water quality and fisheries habitat.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Generate a new vigorous stand
(3) This relatively small unit conforms well to the topography and will be less noticeable with visual mitigation's in adjacent units.
Shelterwood not reasonable due to logging constrains and mistletoe infection.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded by low site/ muskeg, ridgetop to the NW and SW. NE and SE boundary is the logical extent of logging systems.

Soil, Water, and Wildlife Conservation:

BMP 13.15: Unit was configured to exclude muskegs.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

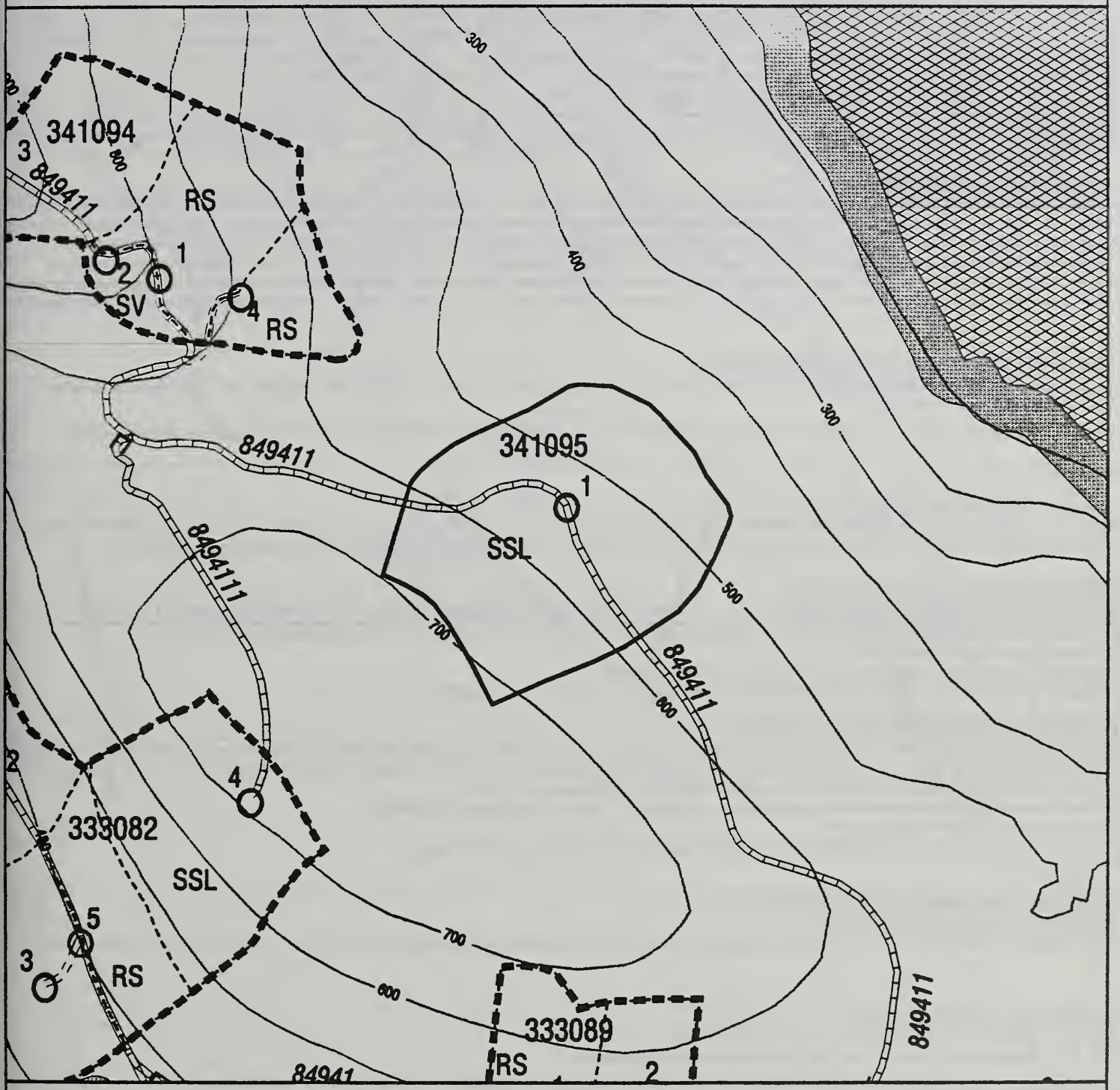
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341095 ALTERNATIVE(S): E

ACRES: 29.96 TOTAL NET MBF: 366.4 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 54 ROLL NO.: 684 PRINT NO.: 183



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341097 MAP #: 98 ACRES: 24

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 55 PHOTO #'S: 684-202

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	12.0	50%	MH-HC	520-230	40	M	MP	L	M	L
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	12.0	50%	H	120-140	70	M	M	-	M	L
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		24.0	100%	-	-	55	M	M	Mistletoe	M	L

STAND CHARACTERISTICS

mosaic of multiple storied stand in the w. hemlock, w. hemlock/y. cedar and mixed conifer series. This stand also has Sitka spruce in the overstory. The stand is composed of medium size, medium to high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 80% on aspects from NE to S. The eastern portion of the unit is bounded by a ridgetop/muskeg. Overstory ages are 150 to 350 years old with moderate to high defect and significant amounts of conk, cedar decline, minor mistletoe, mechanical/animal damage, defoliators and minor windthrow. The understory is 20-40% stocked with 20 to 100 year-old w. hemlock and y. cedar which occur in groups throughout with fair to good vigor. Ground cover is sparse to dense Vaccinium associated with, skunk cabbage, shield fern and minor amounts of deer cabbage in the volume class 4 area. Minor new windthrow found throughout. Site is fair to good over the unit as a whole. Much of the w. hemlock is dying off in the areas between volume class 5 & 6.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Small Slackline with 70 foot tower. A mobile tail spar may be used along the part of the boundary that is the road. Not suitable for partial cut. Snag retention constitutes a safety hazard.

Visual Resource Management: VQO Modification. Viewed in the midground from the Sandborn Canal. Screened by remaining foreground trees. Should meet VQO.

Soils / Geology: No concerns.

Fisheries / Watershed: No streams. No concerns.

Wildlife: Surveys for goshawk-no response. Recommend leaving live reserve trees and snags to maintain habitat structure. Clearcut with reserves was adopted for this unit. Avoid disturbance to nesting goshawks known to be in vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemmented.

Cultural / Recreation / Subsistence: No Concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention between settings.
(4) Retain minor amounts of green cull or high defect trees in the west line for vertical stand structure and cavity nesting habitat.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on the break in slope between the north and south when feasible. Methods to provide good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts. Individual reserves should be green culls, y. cedar or less common Sitka spruce when found.
Tall timber to the north and east of the unit will partially hide the unit from view. Trees are 100-110 feet in total height.
Shelterwood not feasible with logging system.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East and south bounded by road 84941. The western boundary is a class III creek and adjacent low site areas. The north boundary is the logical extent of logging systems.

Soil, Water, and Wildlife Conservation:

BMP 12.17: Close off temp. spurs. Rip after use to create seed bed.
BMP 18.1: Reserve trees will serve for snag recruitment and maintain habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

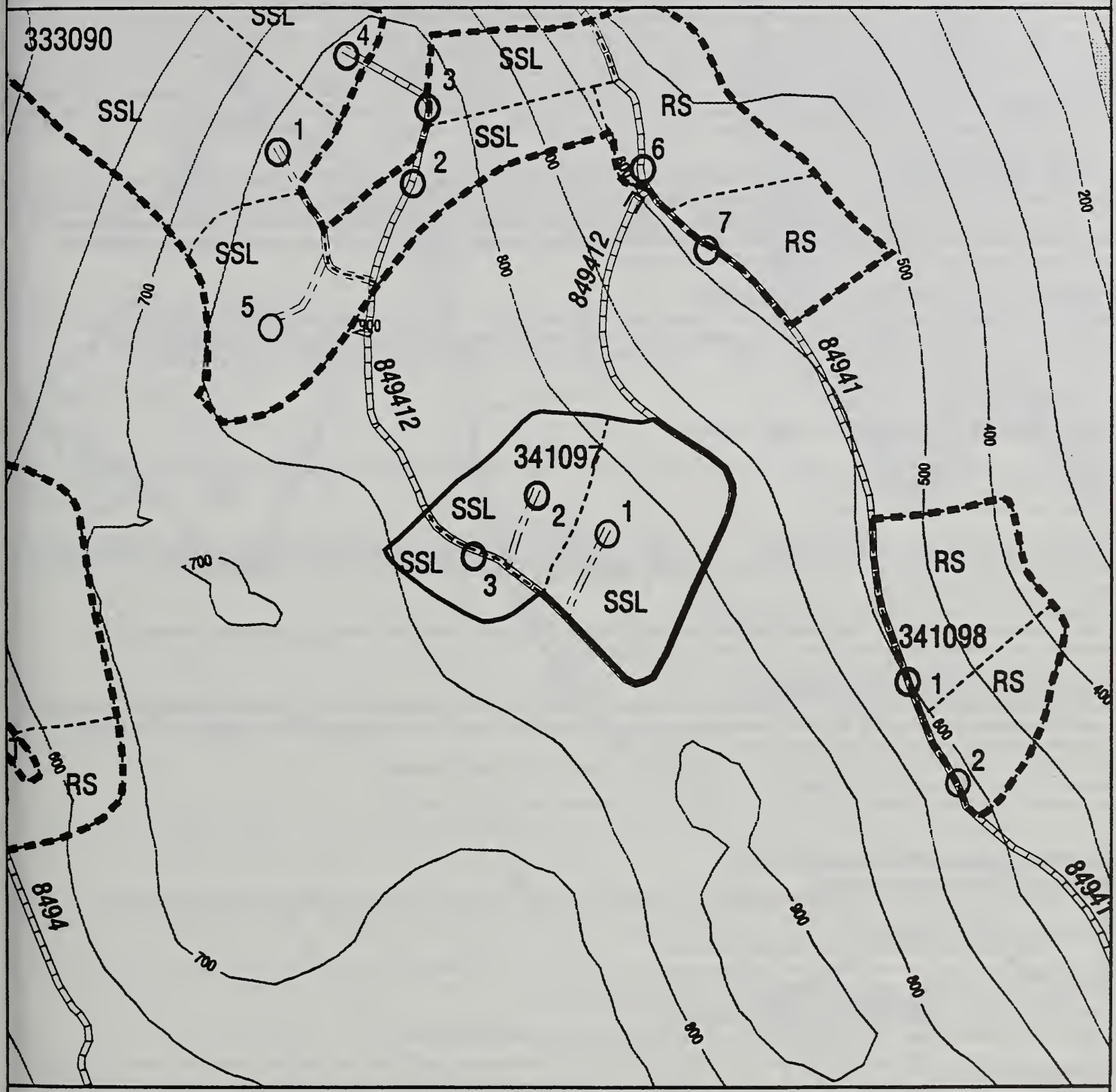
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341097 ALTERNATIVE(S): E

ACRES: 23.84 TOTAL NET MBF: 552.9 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 202



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	84	UNIT #:	341098	MAP:	101	ACRES:	17
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	55			PHOTO #'S:	684-202
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	2.7	16%	H	140-110	60	M	M	M	H	M
VC-6	39.9	13.8	84%	H	120-140	65	M	M	M	H	M
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		16.5	100%	-	-	64	M	M	Windthrow	H	M

STAND CHARACTERISTICS

Two storied stand in the w. hemlock series. This stand also has minor amounts of Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 30 to 50% on aspects from NE to E. Overstory ages are 250 to 350 years old with high defect and significant amounts of conk, root rot, mechanical/animal damage, defoliators and windthrow. The understory is <20% stocked with 80 to 100 year old W. hemlock and Sitka spruce which occur in groups throughout with poor vigor. Ground cover is sparse to moderately dense Vaccinium associated with devils club, shield fern and skunk cabbage. Scattered new windthrow found throughout. Site is good to very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running skyline. East boundary modified to conform with estuary buffer. Visual concerns may also be mitigated by this reconfiguration. The road (84941) will serve as a continuous landing for this unit. Operationally suitable for light partial cut. Snag retention not advised due to safety concerns.

Visual Resource Management: VQO Modification. Viewed from the Sandborn canal. North and east buffered by remaining trees. round south corner.

Soils / Geology: No concerns.

Fisheries / Watershed: Unit buffered from beach fringe. No concerns.

Wildlife: Survey for goshawk-no concerns. Surveyed for marbled murrelet- moderate density. Recommend leaving live reserve trees and snags for habitat structure. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention.
(4) Retain minor amounts of green cull or high defect trees in the south and east portions of the unit for vertical stand structure and cavity nesting habitat.
(5) Maintain estuary habitat quality by leaving buffer and potential nesting trees in unit.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on the east and south portions when feasible. Methods to provide good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts.
Individual reserves should be green culls, less common Sitka spruce when found.
Tall timber to the north and east of the unit will partially hide the unit from view. Trees are 100-130 feet in total height.
Shelterwood may not be feasible with logging system.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Western unit boundary is road 84941 The western boundary is the 1000' estuary buffer. The north and south boundaries are settings retained during this harvest..

Soil, Water, and Wildlife Conservation:

BMP 18.1: reserve trees provide habitat structure and snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341098 ALTERNATIVE(S): E

ACRES: 16.49 TOTAL NET MBF: 526.7 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 202



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341099 MAP #: 114 ACRES: 23

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 55 PHOTO #'S: 684-202

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.2	4.4	20%	XC	410	60	M	MP	L	M	L
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	18.0	80%	H	120-130	80	M	M	L	H	L
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		22.4	100%	-	-	76	M	M	Mistletoe	H	L

STAND CHARACTERISTICS

Mosaic of even aged functional stands predominantly in the w. hemlock series. This stand also has Sitka spruce and a trace of Y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. The unit has a minor inclusion of mixed conifer which is young and uneven aged. Slopes range from 0 to 55% on NE aspects which are bisected by a significant class II V-notch creek to the south of the unit and a class I, V-notch to the east.. The northeastern portion of the unit is bounded by a muskeg. Overstory ages are 150 to 400 years old with moderate defect and significant amounts of conk pockets of mistletoe, mechanical/animal damage and scattered windthrow. The understory is 20-40% stocked with 20 to 70 yearold w. hemlock and mt. hemlock which occur in groups throughout with poor to good vigor. Ground cover is sparse to dense Vaccinium associated with minor amounts of devils club and skunk cabbage and significant amounts of shield fern. Scattered new windthrow found throughout. Site is fair to very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: 90 foot Slackline system. Southeast corner of unit excluded due to class II buffer and poor deflection. unit operationally suitable for heavy partial cut. Guyline extensions required south of landing.

Visual Resource Management: VQO Modification. Seen in midground from the Sandbom Canal. Complex topography and foreground trees should buffer the view of the north 1/2 of the unit. If feasible leave green culls and snags on southern half of unit. Should meet VQO. (So. 1/2 of unit was deleted during layout)

Soils / Geology: No concerns.

Fisheries / Watershed: East is bounded by a combination class I & II buffer. All class I & II streams surveyed and buffered.

Wildlife: Surveyed for marbled murrelets- moderate density. Recommend leaving live reserve trees and snags to maintain habitat structure. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention.
(4) Retain minor amounts of green cull or high defect trees in the south and east portions of the unit for vertical stand structure and cavity nesting habitat.
(5) Maintain adjacent estuary habitat quality by leaving buffer and potential nesting trees in unit.
(6) Maintain fisheries habitat.
(7) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on the east and south portions when feasible. Methods to provide good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts. Individual reserves should be green culls, less common Sitka spruce when found. Retain the majority of the volume class 4 area which is heavy to reproduction. (SW Corner)
Tall timber to the north and east of the unit will partially hide the unit from view. Trees are 100-130 feet in total height.
Shelterwood may not be feasible with logging system.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

SE corner and south line are class II buffer. Upper east line is a muskeg area. West line is along road 84941. North line is a logical logging boundary.

Soil, Water, and Wildlife Conservation:

BMP 13.16: Directional falling away from buffers.
BMP 18.1: reserve trees will maintain habitat structure and provide snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce to make the stand more resistant to dwarf mistletoe.

MONITORING PLAN

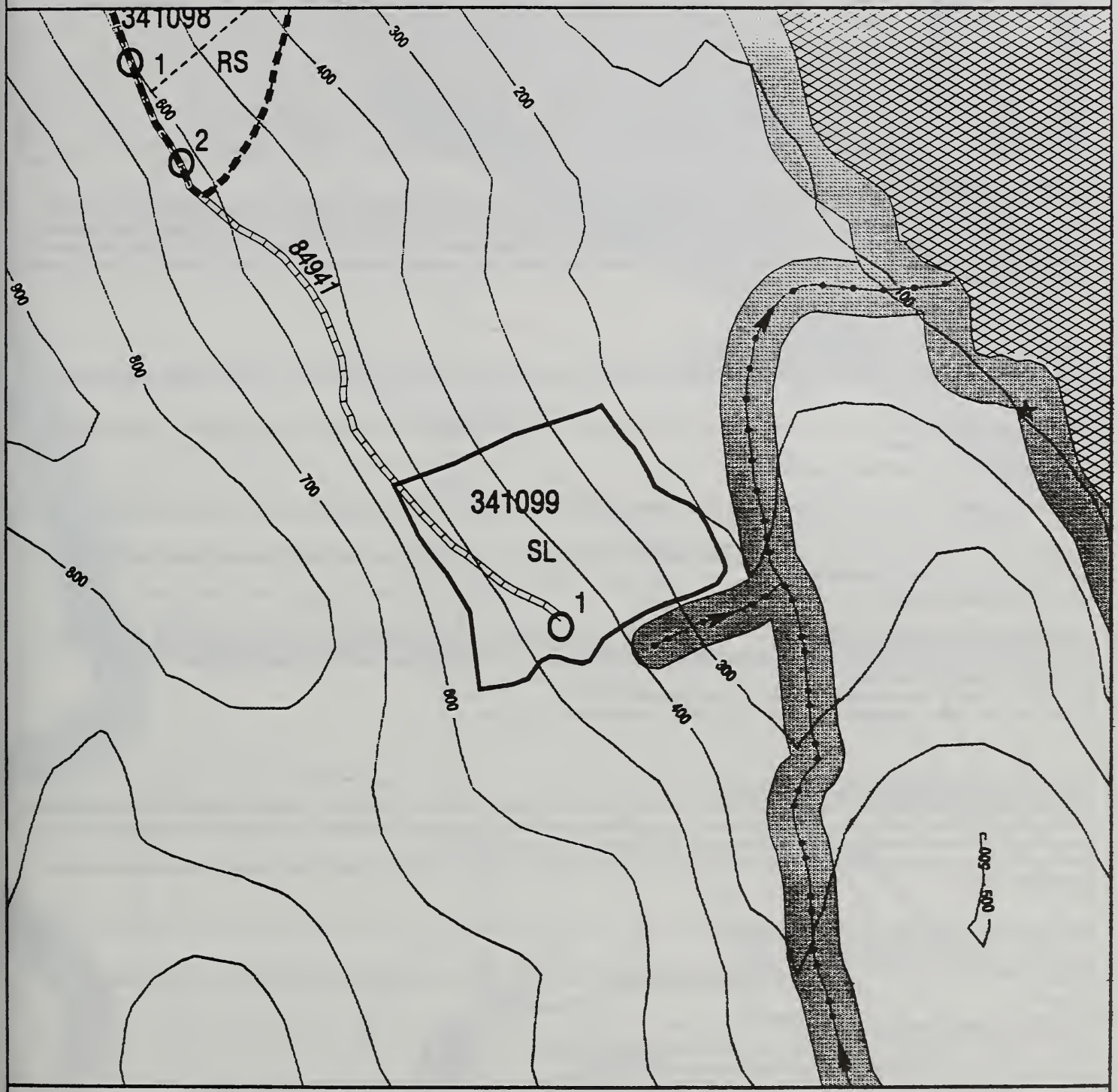
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341099 ALTERNATIVE(S): E

ACRES: 22.46 TOTAL NET MBF: 667.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 202



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341101 MAP #: 123 ACRES: 15

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 56 PHOTO #'S: 684-213

ALTERNATIVE(S): D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.2	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	15.4	100%	H	120-140	90	H	M	H	H	M
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		15.4	100%	-	-	90	H	M	Mistletoe	H	M

STAND CHARACTERISTICS

Even age functional stand in the w. hemlock an w. hemlock/ y. cedar series. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from10 to 80% on aspects from NE to N which is adjacent to a significant V-notch creek to the west. Overstory ages are 150 to 330 years old with high defect and significant amounts of conk, mistletoe, mechanical/animal damage, defoliators, and minor windthrow. The understory is <20% stocked with 20 to 40 year old w. hemlock which occur in groups throughout with poor to fair vigor. Ground cover is sparse to moderately dense vaccinium associated with devils club and shield fern. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter yarding. logs flown an avg. yarding distance of 2500 feet. Use landing at unit 341103 on road 8490. Boundary modified to avoid unstable soils to the west.

Visual Resource Management: VQO Modification. Unit is on the nose of a ridge, in a "billboard" location and could result in maximum modification. Consider leaving green culls and snags. Priority 2.

Soils / Geology: No comments listed on post field.

Fisheries / Watershed: Class III to west unstable - frequent debris dams and mass wasting of side slopes. Mass wasting potential is high. Recommend moving boundary to the east. (Boundary was moved during layout.)

Wildlife: Survey for northern goshawk - no response. Surveys for marbled murrelet- low density. Recommend leaving live reserve trees and snags for habitat structure. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention with shelterwood.
(4) Maintain water quality and adjacent estuary habitat with retention of timber at sensitive class III stream.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) Provides a high sawlog volume return from a stand that is past its peak productivity.(2) Reserve trees provides good phenotypic trees for vertical and cavity nesting habitat structure, a source of blowdown for ecological functioning, and softening of visual impacts. Individual reserves should be green culls, y. cedar or less common Sitka spruce when found. Other alternatives considered but rejected:
Clearcut or clearcut with reserves would not mitigate wildlife and visual concerns. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is a triangle and is bounded to the west by a setback from a class III V-notch, to the NE by the estuary buffer and the south by the back of a prominent ridge.

Soil, Water, and Wildlife Conservation:

Logs will be fully suspended with helicopter system to avoid unnecessary soil disturbance.
BMP 18.1: Shelterwood maintains habitat structure and provides snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Plant Sitka spruce to slow the spread of dwarf mistletoe in the stand.
(4) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

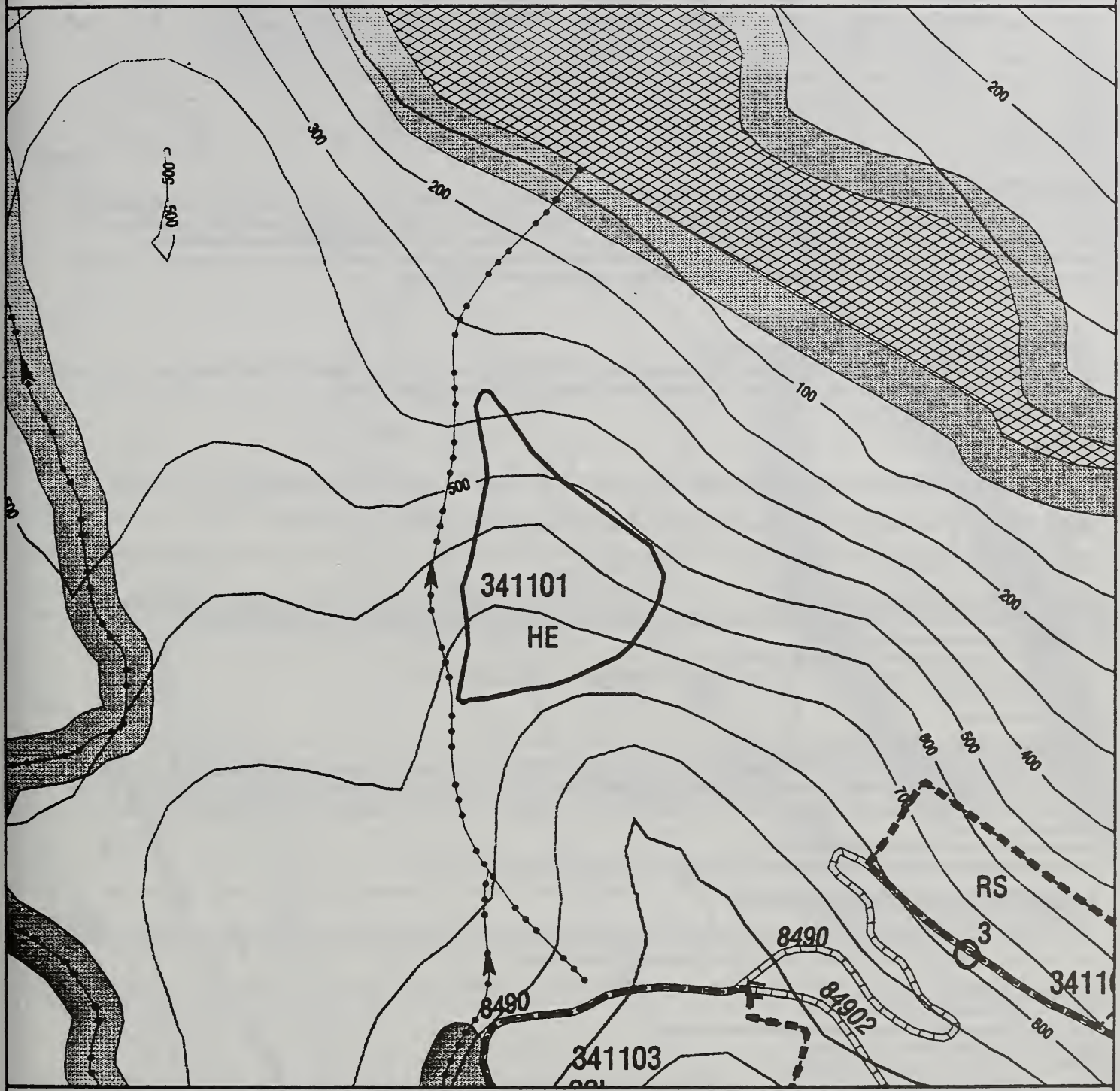
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341101 ALTERNATIVE(S): D

ACRES: 15.44 TOTAL NET MBF: 525.5 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 213



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	84	UNIT #:	341102	MAP #:	138	ACRES:	48
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	30			PHOTO #S:	1088-47
						ALTERNATIVE(S):	B, C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	25.2	50%	H-HC	220-130	50	L	MP	-	M	L
VC-5	23.7	22.8	45%	H-HC	130-220	60	L	MP	-	M	L
VC-6	39.9	-	-	-	-	-	-	-	-	-	-
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	2.3	5%	XC	-	35	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		50.3	100%	-	-	52	L	MP		M	L

STAND CHARACTERISTICS

Mosaic of two-storied stands in the w. hemlock and w. hemlock/y. cedar series, with the northern area as mixed conifer/ low site. This stand also has Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 90% on aspects from NE to E. The western portion of the unit is bounded by class II & III creeks. Overstory ages are 150 to 350 years old with moderate defect and significant amounts of mechanical/animal damage and minor windthrow. The understory is <20% stocked with 20 to 40 year old w. hemlock which occur in groups throughout with fair vigor. Ground cover is moderately dense vaccinium associated with skunk cabbage. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Running skyline (North setting--continuous landing). Small Slackline (South Setting). Unit modified to fit merch. timber types. Snag retention not advisable due to safety concerns. This unit is operationally suited for a heavy partial cut. Tailtrees and tiebacks required.

Visual Resource Management: Not seen.

Soils / Geology: No concerns.

Fisheries / Watershed: Fishless class III stream at NE boundary. Class II stream near SE boundary with deep low flow channel that has overwinter fish habitat.

Wildlife: Recomend retaining live reserve trees and snags for habitat structure. (Silviculturist reported hearing goshawk on 7/23/94.)

Cultural / Recreation / Subsistance: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention.
(4) Retain minor amounts of green cull or high defect trees for vertical stand structure and cavity nesting habitat.
(5) Maintain fishereis habitat.
(6) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on the east and south portions when feasible. Methods to provide good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts. Individual reserves should be green culls, high defect trees and a proportional amount of Sitka spruce when found. Retain the majority of the volume low site which is in the northern area.
Shelterwood may not be feasible with logging system.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The NE portion of the unit is bounded by a class III stream. The SE portion of the unit is bounded by a class II stream buffer. The western boundry is adjacent to a ridgetop and is generally low site. The north and south ends of the unit are bounded by low site areas.

Soil, Water, and Wildlife Conservation:

BMP 13.2: Directional falling away from buffers.
BMP 12.6: Unit boundary maintained at least 100' from class II stream.
BMP 13.15: Unit configured to exclude muskeg.
BMP 18.1: Reserve trees maintain habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees..
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce to encourage the optimum productivity of the stand.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341102 ALTERNATIVE(S): B C D E

ACRES: 47.98 TOTAL NET MBF: 789.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 30 ROLL NO.: 1088 PRINT NO.: 47



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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 84 UNIT #: 341103 MAP: 135 ACRES: 47

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 56 PHOTO #'S: 684-212

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	24.2	52%	XC	410	70	M	MP	-	M	L
VC-5	23.7	21.8	47%	H	110-120	80	M	M	L	H	L
VC-6	39.9	0.8	2%	H	120	85	M	M	L	H	L
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		46.8	100%	-	-	75	M	MP	Mistletoe	M	L

STAND CHARACTERISTICS

Mosaic of even aged functional and two-storied stands in the w. hemlock and mixed conifer series. This stand also has Sitka spruce and Y. cedar in the overstory. The stand is composed of medium to large, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 50% on aspects from SW to NW. The eastern portion of the unit is bounded by a ridgetop and the western portion by a class II stream buffer. Overstory ages are 150 to 350 years old with high defect and significant amounts of conk, cedar decline, minor mistletoe, mechanical/animal damage, defoliators and scattered windthrow. The understory is 20-40% stocked with 20 to 40 year old w. hemlock and Sitka spruce which occur in groups throughout with fair vigor. Ground cover is moderately dense vaccinium associated with rusty menziesia, devils club, shield fern and skunk cabbage. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Small slackline system with a 70' tower. (Gravity return possible on 1/2) Except for SE corner unit is suitable for heavy partial cut Boundary modified to fit field observations and Class II stream buffer to the west. Side blocking required for SE corner. 95 foot spur to landing #1.

Visual Resource Management: VQO Modification: Viewed from the mid ground of the Sandborn canal. Unit is oblique to the view. and minimally viewed. Should meet VQO.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Unit buffered on the west side 90' back from slope break due to instability around V- notch. Road modified to conform with buffer. Unstable stream bed and side slopes. Debris torrents in lower class III reach. Side slopes 60 to 90%. Area avoided for harvest.

Wildlife: Survey for northern goshawk- no response. Survey for marbled murrelet- no observations. Recommend leaving live trees and snags to maintain habitat diversity. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention.
(4) Retain minor amounts of green cull or high defect trees for vertical stand structure and cavity nesting habitat.
(5) Maintain fish habitat.
(6) Use two silvicultural methods for side by side comparison for adaptive management.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

West boundary is a class II & III V- notch buffer. The east boundary is a ridgetop area. The south boundary is adjacent to low site areas. And the north boundary is the logical boundary for the proposed logging system.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Directional falling away from class II buffer in the west portion. Extra buffer for class II V-notch.
BMP 18.1: Shelterwood preserves habitat structure and provides snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Side by side comparison of clearcut and shelterwood with reserve for adaptive management.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce to encourage the optimum productivity of the stand.

MONITORING PLAN

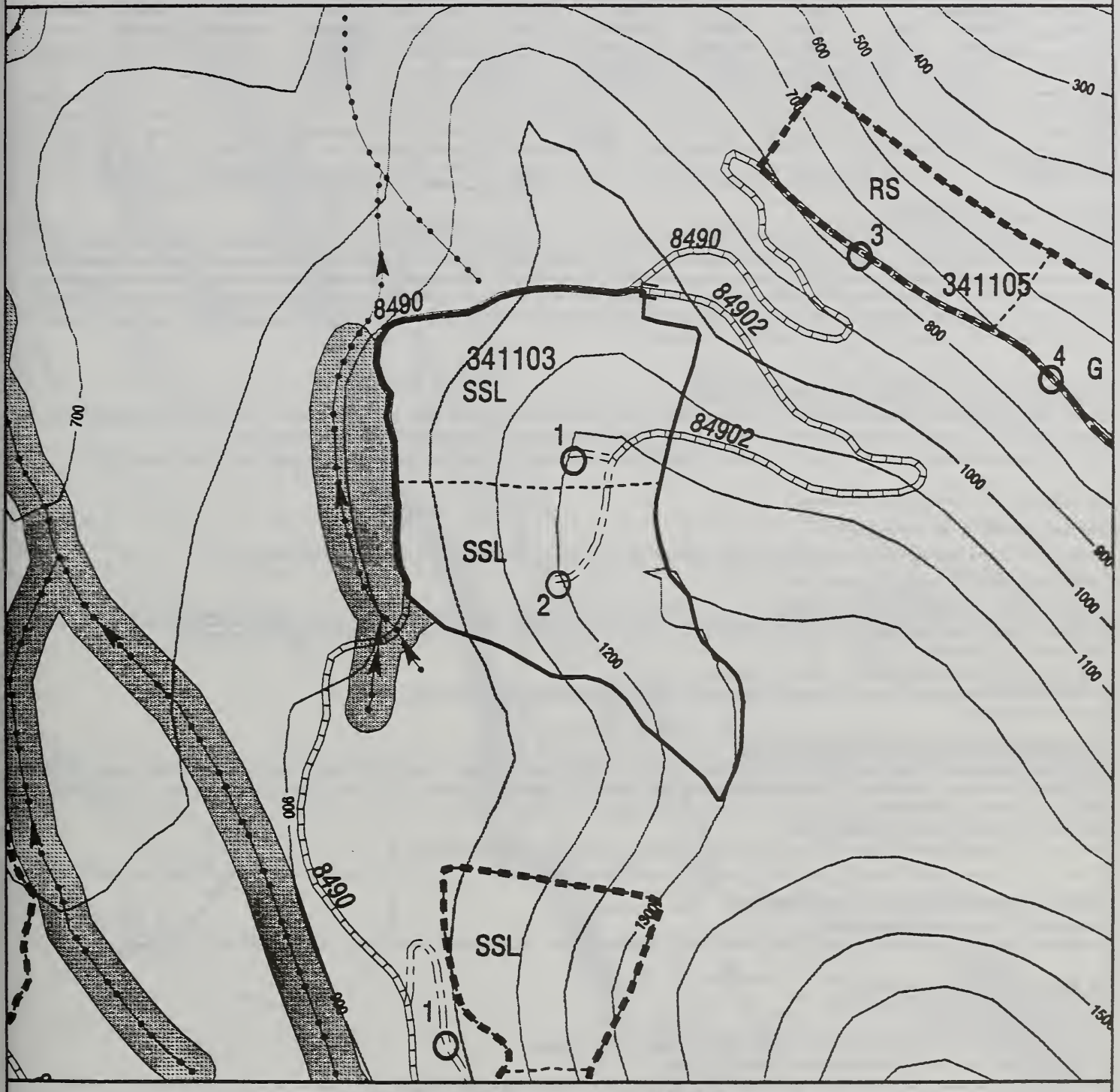
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341103 ALTERNATIVE(S): E

ACRES: 46.88 TOTAL NET MBF: 785.9 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 212



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341104 MAP: 143 ACRES: 71

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 56 PHOTO #'S: 684-211

ALTERNATIVE(S): C, D, E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	40.5	57%	HC-XC	220-420	60	L	MP	L	M	L
VC-5	23.7	29.6	42%	HC-S	220-210	70	M	M	M	M	M
VC-6	39.9	-	-	-	-	-	-	-	-	-	-
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	0.4	1%	XC	420	38	L	P	L	P	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		70.5	100%	-	-	64	L	MP	Windthrow	M	L

STAND CHARACTERISTICS

Mosaic stand in the w. hemlock/y. cedar and mixed conifer series. This stand also has Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 90% on aspects from W to SW which are bisected by 4 small creeks. The eastern portion of the unit is bounded by a muskeg along a class II creek. Overstory ages are 150 to 350 years old with high defect and significant amounts of cedar decline, mechanical/animal damage, defoliators, and pockets of windthrow. The understory is <20% stocked with 20 to 40 year old w. hemlock in groups throughout with good vigor. Ground cover is dense vaccinium associated with shield fern and skunk cabbage. Significant new windthrow found on upper slopes. Site is fair to good over the unit as a whole. Upper slopes dropped from the original unit due to soil instability and slopes over 80%.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit was substantially modified from original design because of instability on upper slopes that were over 75% slope that were identified by soils during prefield. Suitable for retention in uphill yarding area below the 8490 road. Snag retention is a safety issue. Skyline logging.

Visual Resource Management: VQO modification. Viewed in the midground from the end of the Sandborn Canal. Unit is oblique to view. Should meet VQO.

Soils / Geology: No comments listed on post field.

Fisheries / Watershed: No streams in unit.

Wildlife: Recommend retaining live reserve trees and snags to maintain habitat structure. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention.
(4) Retain minor amounts of green cull or high defect trees for vertical stand structure and cavity nesting habitat.
(5) Maintain fish habitat.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on the area below the road. Methods to provide good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts. Individual reserves should be green culls, high defect trees and a proportional amount of Sitka spruce and y. cedar when found.
Shelterwood may not be feasible with logging system.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded by soil class IV and some low site land to the east and low site lands to the west. North and south boundaries are the extent of logical logging systems.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Reserve cavity nesting structures.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce to encourage the optimum productivity of the stand.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341104 ALTERNATIVE(S): C D E

ACRES: 70.6 TOTAL NET MBF: 1123.2 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 211



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341105 MAP: 129 ACRES: 48

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 57 PHOTO #'S: 1184-151

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	47.5	100%	H	140-120	70	M	G	M	H	M
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		47.5	100%	-	-	70	M	G	Mistletoe	H	M

STAND CHARACTERISTICS

Mosaic of multiple storied stands in the W. hemlock series. This stand also has a minor amount Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 80% on aspects from NE to N. Overstory ages200 to 300+ years old with moderate defect and significant amounts of mistletoe, mechanical/animal damage, and potential windthrow. The understory is 20-40% stocked with 20 to 60 year old W. hemlock which occur in groups throughout with fair vigor. Ground cover is moderately dense Vaccinium associated with devils club, skunk cabbage and shield fern. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit is comprised of the portions of 341105 & 6 (paper plan) that are outside of the estuary buffer. Adhere to visual constraints- truncated unit in the southeast corner. Operationally feasible for a heavy partial cut. Snag retention is a safety hazard. Tailholds available.

Visual Resource Management: VQO Modification. Lower 1/2 of unit dropped for estuary. Round upper boundary of unit to emulate natural openings.

Soils / Geology: No concerns.

Fisheries / Watershed: No streams in unit.

Wildlife: Survey for marbled murrelet- moderate density. Recommend leaving live reserve trees and snags for habitat structure. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No portion of unit was surveyed as part of local PH-15. No significant cultural resources ID. Stumps with springboard notches from past logging activity are present at elev. 40 to 50' (off unit) No other cultural resources noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention.
(4) Retain minor amounts of green cull or high defect trees for vertical stand structure and cavity nesting habitat.
(5) Maintain fish habitat.
(6) Use two silvicultural methods for side by side comparison for adaptive management.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) Provides a moderately high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees (green cull) on the north setting when feasible. Methods to provide good phenotypic trees for vertical and cavity nesting habitat structure and softening of visual impacts. Individual reserves should be green culls, high defect trees and a proportional amount of Sitka spruce or y. cedar when found. South setting clearcut is more operationally functional and will provide a side by side comparison of these two silvicultural methods for adaptive management.
Clearcut or clearcut with reserves of the entire area would not provide sufficient structural habitat and visual mitigation.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Sandborn estuary buffer bounds the unit to the northeast. Road 8490 bounds the unit to the southwest. The south east portion of the unit is bounded by logical yarding limitations.

Soil, Water, and Wildlife Conservation:

BMP 13.15: Retain cover in unit adjacent to Sandborn Canal estuary.
BMP 18.1: Shelterwood provides cavity nesting habitat and snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Side by side comparison of clearcut and shelterwood with reserve for adaptive management.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Plant S. spruce to encourage the optimum productivity of the stand.

MONITORING PLAN

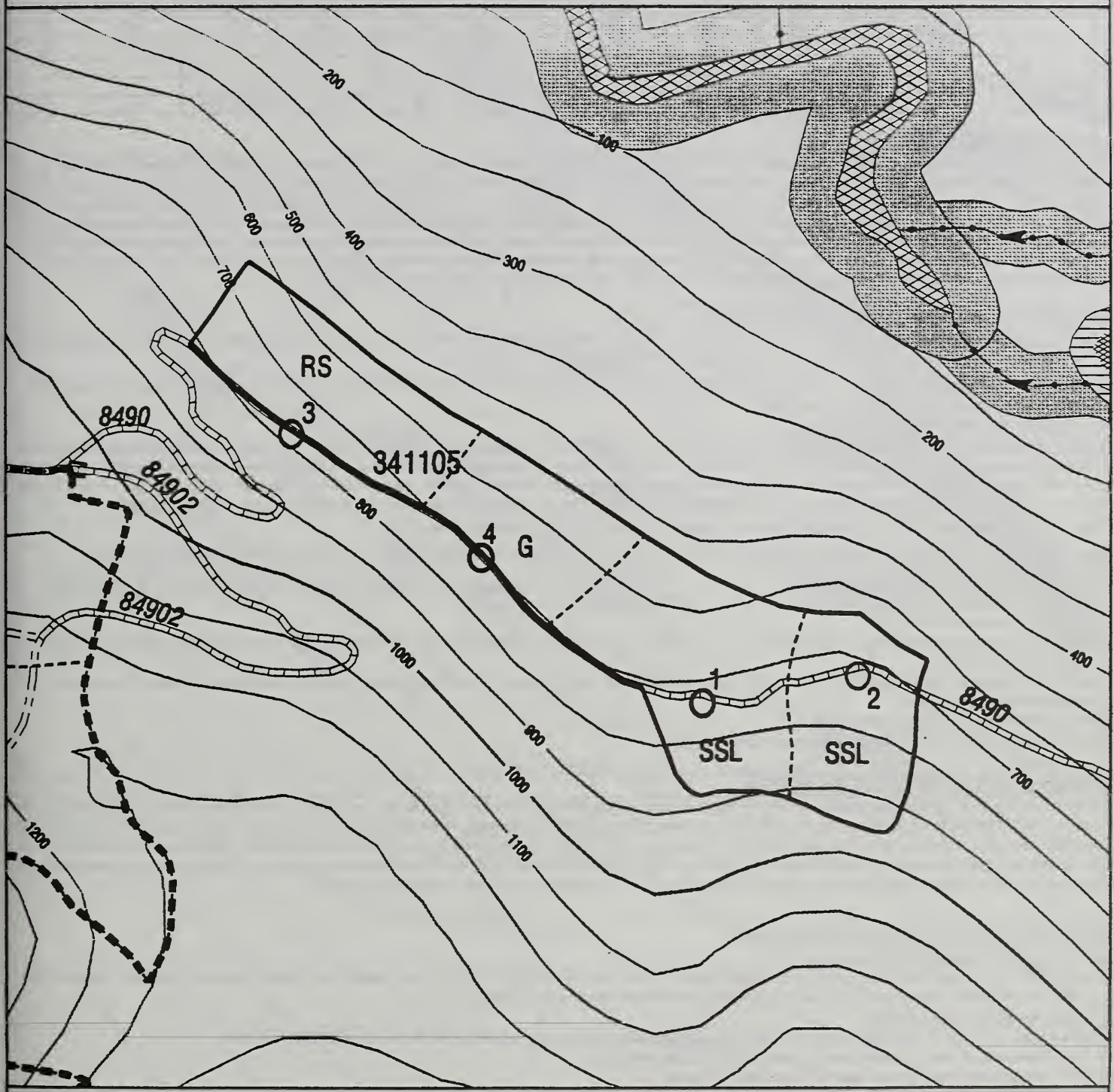
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341105 ALTERNATIVE(S): E

ACRES: 47.47 TOTAL NET MBF: 1615.3 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 212



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	84	UNIT #:	341107	MAP#:	139	ACRES:	128
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	31			PHOTO #'S:	1088-23
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	5.3	5.3	4%	HC-H	210-220	50	M	M	-	M	M
VC-5	11.1	11.1	9%	H-HC	110-210	65	M	M	L	H	M
VC-6	100.2	100.2	78%	H-MH	130-510	85	M	M	L	H	M
VC-7	11.6	11.6	9%	H-S	110-320	85	M	M	-	H	M
Low	-	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**128.2**	**100%**	-	-	**82**	**M**	**M**	Mistletoe	**H**	**M**

STAND CHARACTERISTICS

Mosaic of various functionally even age stands w. hemlock, mt. hemlock, Sitka spruce and w. hemlock/y. cedar series. The stand is composed of medium to large, high quality sawtimber with moderate amounts of utility pulp. Slopes range from 20 to 55% with some steep pitches up to 90%. The NE aspect of this unit is bisected by one major class III V-notch creek *(which is up to 70 feet deep)* as well as several small class III creeks.. The center of the unit contains a small muskeg and low site area. Overstory ages are 200 to 400 years old with moderate to high defect and significant amounts of conk, mistletoe, and mechanical/animal damage. The understory is <20% stocked with 20 to 50 year old w. hemlock which occur in groups throughout with poor to fair vigor. Ground cover is sparse on lower slopes to dense on upper slopes. The vegetation includes vaccinium associated with skunk cabbage on upper slopes and devils club and shield fern on lower slopes. Minor new windthrow found throughout the area. A small patch of advanced reproduction adjacent to the unit to the southeast was created by a wind event. Site is good to very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Settings 1, 3, 4 & 5 90' skyline. Setting 2 70' skyline. Unit not suitable for partial cut. Unit boundary was modified to reflect logging feasibility and fisheries concerns. A setting was added due to the deletion of unit 341108. Snag retention is a safety issue.

Visual Resource Management: Not seen. However, review after the field season it was determined that the unit may have a small visual effect and that the visuals in the Sandborn area are important to the public. Priority rating 2.

Soils / Geology: No concern listed.

Fisheries / Watershed: Five class II tributaries found and mapped feeding into class I creek on the north boundary. The class I creek offers excellent habitat for anadromous fish, which were seen in abundance - both fry and returning salmon. Bear activity abundant. Intensive survey conducted. (Class II streams deleted from unit or buffered 120'.) Recommend split yarding on significant deep class III creeks as well as lower portions of other class III creeks. Recommend full suspension yarding adjacent to class II areas. Preserve water quality in class I stream is a concern. Retain 50 percent of the shade producing vegetation on the SE, S, SW and W banks of Class III streams.

Wildlife: Reserve green trees and snags for habitat structure. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: Recreation: Guides/bear hunters like to hike up the Sandborn drainage in the fall. Unit is in area of use by these groups.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class 5, 6 & 7 with diseased, mature overstory.
(2)Volume for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention at class II streams and split yarding away from the deep class III V-notch. Rounding of unit corners and minor retention on the upper slopes.
(4) Retain minor amounts of green cull or high defect trees in the areas adjacent to class II streams for vertical stand structure and cavity nesting habitat. This retention must be compatible with logging systems.
(5) Maintain fisheries habitat in adjacent streams.
(6) One end suspension adjacent to class III streams and class II buffers.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northern portion of the unit is bounded by buffers and a setback area to protect class I & II streams. The southern, eastern, and western boundaries are along logical yarding limits. The east boundary is adjacent to a small patch of advanced reproduction resulting from a wind event

Soil, Water, and Wildlife Conservation:

See items above. BMP 12.17: Seed open areas and creek crossings with Sitka Alder or other native species that will grow fast and hold soils.
BMP 18.1: Reserve trees maintain habitat structure and provide for snag recruitment.
BMP 12.6: Unit boundary maintained at least 100' from Class II streams.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Retain patches of advanced reproduction.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341107 ALTERNATIVE(S): E

ACRES: 128.24 TOTAL NET MBF: 4318.1 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 31 ROLL NO.: 1088 PRINT NO.: 23



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 84 | UNIT #: 341109 | MAP #: 149 | ACRES: 105

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 58 | PHOTO #'S: 1184-158

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	7.0	7%	H	130	40	M	MP	-	M	M
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	98.3	93%	H	120-140	75	M	M	-	H	H
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		105.3	100%	-	-	73	M	M	-	H	H

STAND CHARACTERISTICS

Two-storied stand in the w. hemlock and mt. hemlock series. This stand also has minor amounts of Sitka spruce and y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 55% on a NE aspects. The unit is bisected by a significant class III V-notch creek. The eastern portion of the unit is adjacent to a class II stream. Overstory ages are 150 to years old with moderate to high defect and significant amounts of conk mechanical/animal damage and windthrow. The understory is <20% stocked with 20 to 80 year old w. hemlock which occur in groups throughout with poor to fair vigor. Ground cover is sparse to dense *Vaccinium* associated with devils club, shield fern, and skunk cabbage. Significant new windthrow found on the upper slopes of the unit. Site is or, fair to very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline extensions needed for deflection. Split yard away from class III creek in center of unit. This unit not suitable for partial cut. Snag retention is a safety issue.

Visual Resource Management: Not seen.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Fishless class III stream flows through the unit. Minimal stream habitat due to steep gradient. (40-60%) Falls and cascades pocket water habitats. Marginal habitat near road crossing. Timber on edge of this V-notch should be removed to prevent windthrow in this area and thus sedimentation problems.

Wildlife: Recommend retaining live reserve trees and snags to maintain habitat structure and snag density. Great blue heron nest near western border of unit. Need to confirm exact nest location and modify unit boundary and avoid harvest and road construction within 100 yds of nest. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Regeneration of partially understocked stand, volume class 4& 6 with diseased, mature overstory.
(2) Volume for programmed timber yield.
(3) Mitigation of visual impacts and wildlife concerns by retention at class III streams and split yarding away from the deep class III V-notch.
(4) Maintain fisheries habitat on adjacent streams.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve some individual trees when feasible and feather or scallop edges between the middle settings especially on the lower slope along the large V-notch. Reserves should be green culls or less common species such as Sitka spruce or yellow cedar, when found. Retention of trees and groups of trees between the middle settings will retain about 2 to 3 acres of timber on the lower slopes of the unit below the road and along the deep class III V-notch. Retain a 50 foot buffer on each side of the large class III V-notch. The balance of the unit and settings will be a clearcut.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded on the east by a class II buffer. The balance of the unit is bounded by the extent of logical logging settings along the proposed road.
The unit is 700 or more feet south of the major creek to the north.

Soil, Water, and Wildlife Conservation:

As above. Remove trees along V-notch above road. Retain trees along V-notch below road. Leave small trees along V-notch and any trees found in the V- notch.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Retain patches of advanced reproduction.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341109 ALTERNATIVE(S): E

ACRES: 105.35 TOTAL NET MBF: 3432.7 QUAD(S): SUMA4 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 58 ROLL NO.: 1184 PRINT NO.: 158



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	84	UNIT #:	341110	MAP #:	162	ACRES:	31
AERIAL PHOTO YEAR:	1989	FLIGHT LINE:	32			PHOTO #'S:	1088-2
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	10.2	33%	XC	410	50	M	MP	-	M	M
VC-5	23.7	21.1	67%	HC	220-230	55	M	M	-	H	M
VC-6	39.9	-	-	-	-	-	-	-	-	-	-
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**31.3**	**100%**	-	-	**53**	**M**	**M**	-	**H**	**M**

STAND CHARACTERISTICS

Two-storied stands in the w. hemlock/y cedar and Sitka spruce series. This stand also has mt. hemlock in the overstory. The stand is composed of large, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 2 0 to 50% on aspects from NE to E which are bisected by 3+ small creeks. The eastern portion of the unit is bounded by a class II stream buffer. Overstory ages are 300+ years old with moderate to high defect and significant amounts of conk, defoliators. and mechanical/animal damage. The understory is 20% stocked with 20 to 50 year old w. hemlock which occur in groups throughout with fair vigor. Ground cover is moderate to dense Vaccinium associated with devils club and skunk cabbage. Scattered new windthrow found throughout. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: 70' skyline. Guyline anchors are adequate but will need to be within the buffer on the eastern boundary. Not suitable for a partial cut. Snag retention constitutes a safety hazard. Unit modified to reflect field verified logging plan; infeasible to yard across class II stream.

Visual Resource Management: Not Seen.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Bordered on east by class II stream. Numerous fish passage barriers are located along the reach created by LWD jams. Plunge pools are actively collecting silt and fines in lower portion of reach. Potential for extensive LWD to be added to channel on subsequent moderate flooding events.

Wildlife: recommend retaining live trees and snags to maintain habitat structure and snag density. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 & 5 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation of wildlife concerns by retention.
(4) Retain minor amounts of green cull yellow cedar or high defect trees for vertical stand structure and cavity nesting habitat.
(5) Maintain fish habitat down stream from unit.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve very scattered individual y. cedar (green cull) when feasible. Methods to provide good phenotypic trees for vertical and cavity nesting habitat structure and seed source for y. cedar. Individual reserves should be large green culls.
Shelterwood or group selection may not be feasible with logging system.
Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded to the east by a class II stream, to the south by a small class III V- notch. Western and northern boundary is the extent of logical logging boundary.

Soil, Water, and Wildlife Conservation:

BMP 12..6: Unit boundary maintained at least 100' from Class II stream.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances and future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor y. cedar and S. spruce when found. Remove trees with dwarf mistletoe when found.

MONITORING PLAN

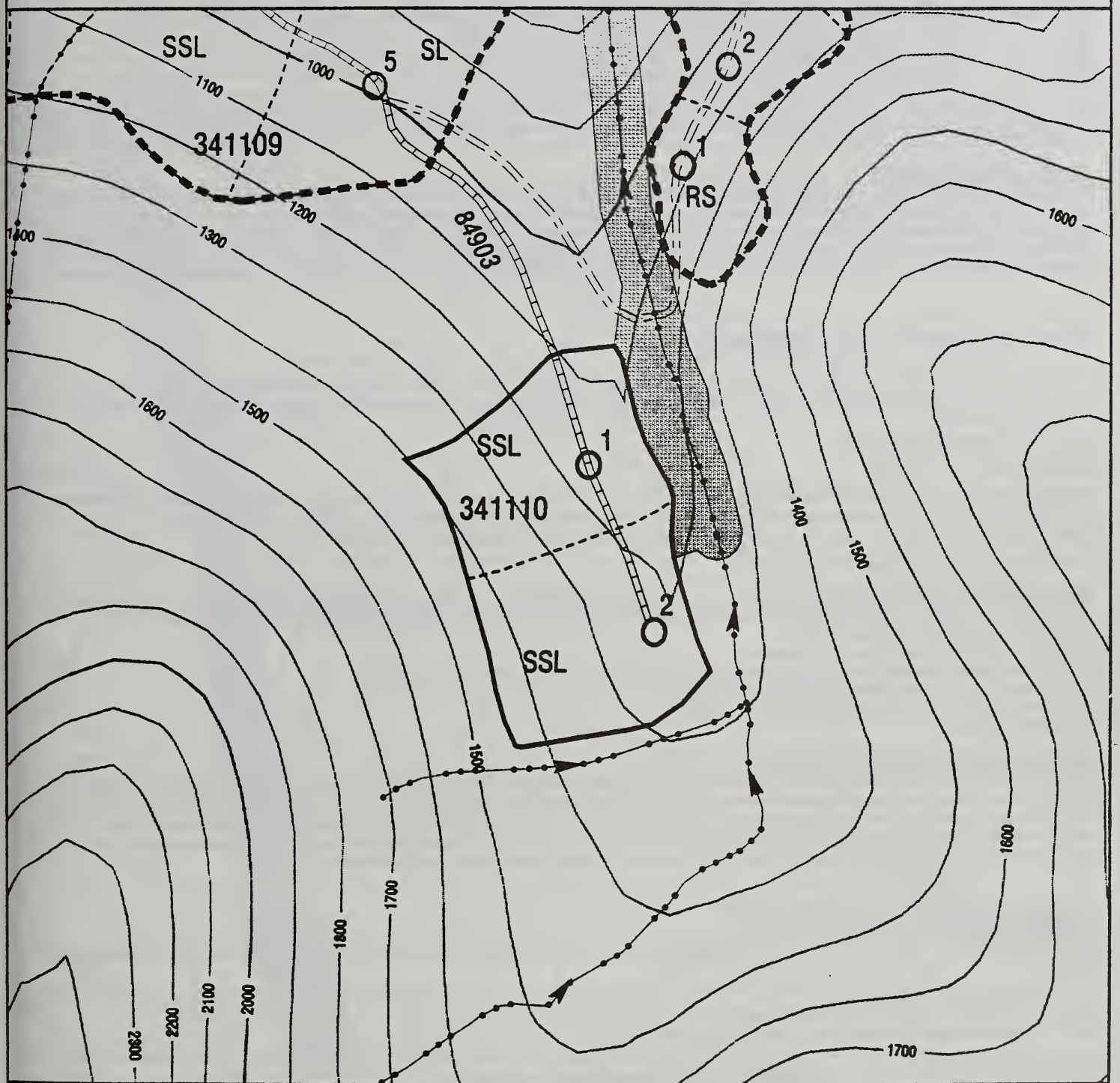
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341110 ALTERNATIVE(S): E

ACRES: 31.25 TOTAL NET MBF: 570 QUAD(S): SUMA4 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 32 ROLL NO.: 1088 PRINT NO.: 2



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341111 MAP #: 152 ACRES: 66

AERIAL PHOTO YEAR: 1989 FLIGHT LINE: 32 PHOTO #'S: 1088-2

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	0.5	1%	HC	220	40	L	MP	M	M	L
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	65.9	99%	H	140-130	65	H	MP	M	H	H
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		66.4	100%	-	-	65	H	MP	Mistletoe	H	H

STAND CHARACTERISTICS

Two-storied & multiple storied stand in the w. hemlock & Sitka spruce series. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 60% , with pitches up to 140% on aspects from NW to W which are bisected by 2 significant V-notch creeks. The western portion of the unit is bounded by a class II stream buffer. Overstory ages are 350 to 400 years old with high defect and significant amounts of conk, mistletoe and mechanical/animal damage windthrow). The understory is 20-40% stocked with 20 to 50 year old w. hemlock and Sitka spruce which occur in groups throughout with fair to good vigor. Ground cover is sparse to moderately dense Vaccinium associated with devils club and skunk cabbage. Scattered new windthrow found throughout. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Setting 1 use a running skyline. Setting 2,3,4 & 5 will require a 90' slackline. Upper SE setting is helicopter. Guyline anchors in setting 1 & 2 in stream buffer. Skyline settings not suitable for partial cut. Split yard away from V-notch class III creeks. Snag retention is safety issue. Remove crossing at creek-temp rd. (47 Sta., including one bridge)

Visual Resource Management: Not seen.

Soils / Geology: No concerns listed.

Fisheries / Watershed: Fishless class II is located on the western border of the unit. Marginal class II habitat exists due to high gradient(20%), silt pools and fish barriers. Three V- notches in mid portion of unit are very suspect as to their stability and in particular to the mainstream where they will drain. Steep HC6 channels.

Wildlife: Recommend retaining reserve trees and snags for habitat structure. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 & 6 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation wildlife and fisheries concerns by retention.
(4) Retain trees between settings on lower unit for stream stabilization, vertical stand structure and cavity nesting habitat.
(5) Retain Sitka spruce on helicopter setting for habitat and seed source.
(6) Maintain water quality and fisheries habitat quality down stream.
(7) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded from the west to the north east by class II stream buffers. To the south and southeast the unit boundary is defined by the feasible extent of logging systems.

Soil, Water, and Wildlife Conservation:

BMP 13.16: Split yarding away from class II V-notch creeks.
BMP 18.1: Reserve trees provide snag recruitment and nesting habitat.

Forest Productivity Activities:

(1) Soil mixing and warming from future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Interplant Sitka spruce by year 5, as needed, for site productivity and to lessen the effects of dwarf mistletoe.

MONITORING PLAN

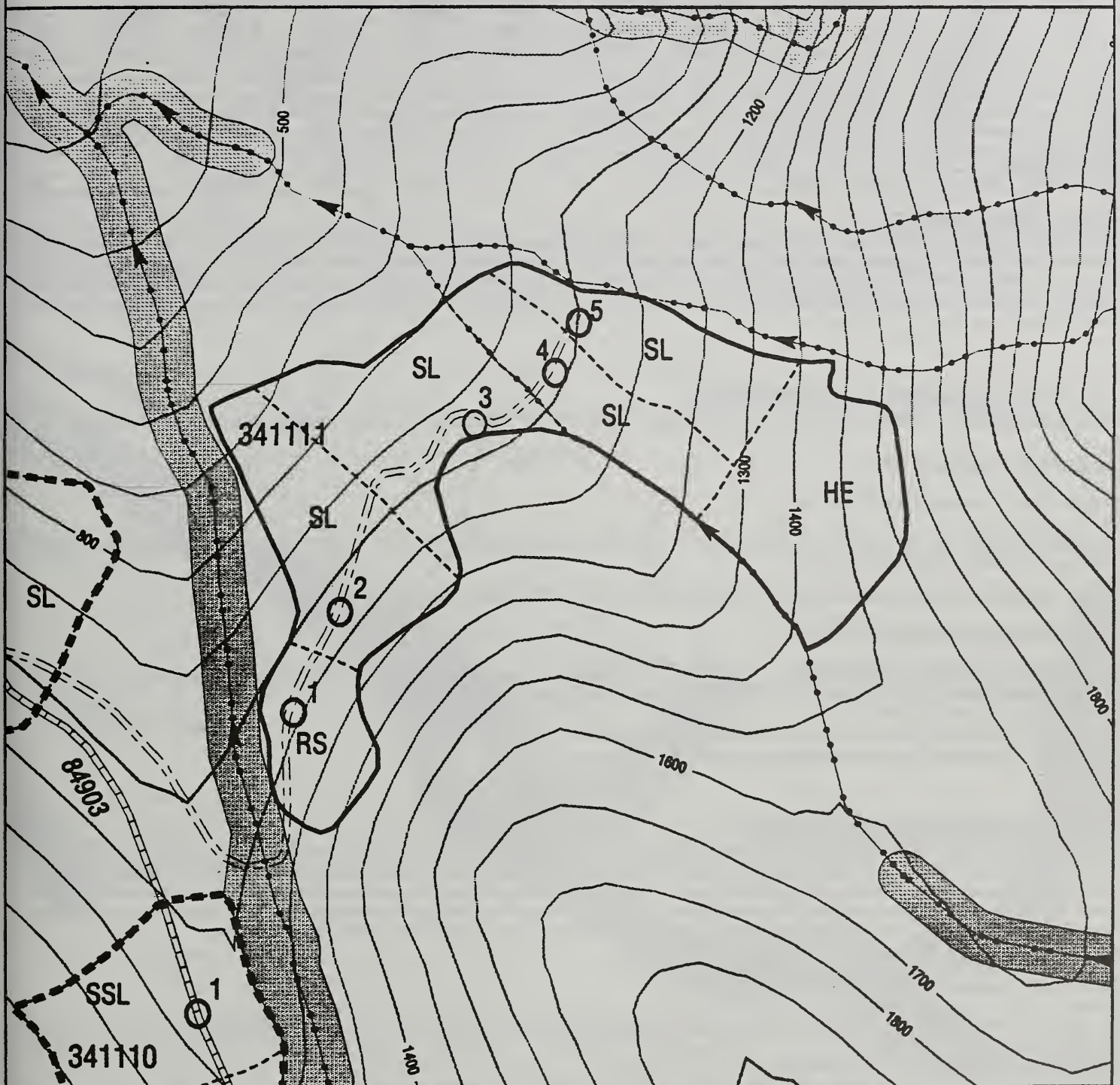
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341111 ALTERNATIVE(S): E

ACRES: 66.37 TOTAL NET MBF: 2248.5 QUAD(S): SUMA4 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 32 ROLL NO.: 1088 PRINT NO.: 2



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 84 | UNIT #: 34112 | MAP #: 136 | ACRES: 35

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 58 | PHOTO #'S: 1184-159 | ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	20.6	60%	H	120-140	75	M	M	L	H	H
VC-7	57.3	14.0	40%	S	320-330	90	M	M	L	M	L
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		34.6	100%	-	-	81	M	M	Mistletoe	H	M

STAND CHARACTERISTICS

Two-storied/ mosaic stands in the w. hemlock and Sitka spruce series. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 60% with SW aspects Overstory ages are 250 to 400 years old with moderate to high defect and significant amounts of conk, mistletoe, mechanical/animal damage and windthrow. The understory is <20% stocked with 20 to 50 year old w. hemlock and Sitka spruce which occur in groups throughout with fair vigor. Ground cover is moderate to dense Vaccinium associated with devils club, skunk cabbage shield fern. Significant new windthrow found in pockets on the upper portion of the unit. Site is very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline yarding. Landing 1 needs to have guylines in buffer. Dir. fall away from buffer. Not suitable for partial cut. Snags safety issue.

Visual Resource Management: Not Seen.

Soils / Geology: No comments listed on post field.

Fisheries / Watershed: Marginal class I/ class II 2% stream south of unit. Marginal stream contained salmon & suit. overwinter habitat. The low gradient channel and side slopes generally provide good stability throughout.

Wildlife: Unit contains suitable mountain goat habitat. Avoid flight paths in mountain goat kidding habitat from mid May through June.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 with diseased, mature overstory to a vigorous young stand.
(2)Provide for programmed timber yield.
(3) Mitigation of wildlife impacts by unit configuration and size combined with mitigation's in adjacent units.
(4) Protection of downstream fisheries with large stream buffers and reduced unit size.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded on the Northwest, the south and south east by streams and classified stream buffers. The north boundary is the limit of feasible logging systems.

Soil, Water, and Wildlife Conservation:

BMP 13.16: Directional falling away from buffer areas.
BMP 12.6: Unit boundary maintained 120' away from class I stream.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

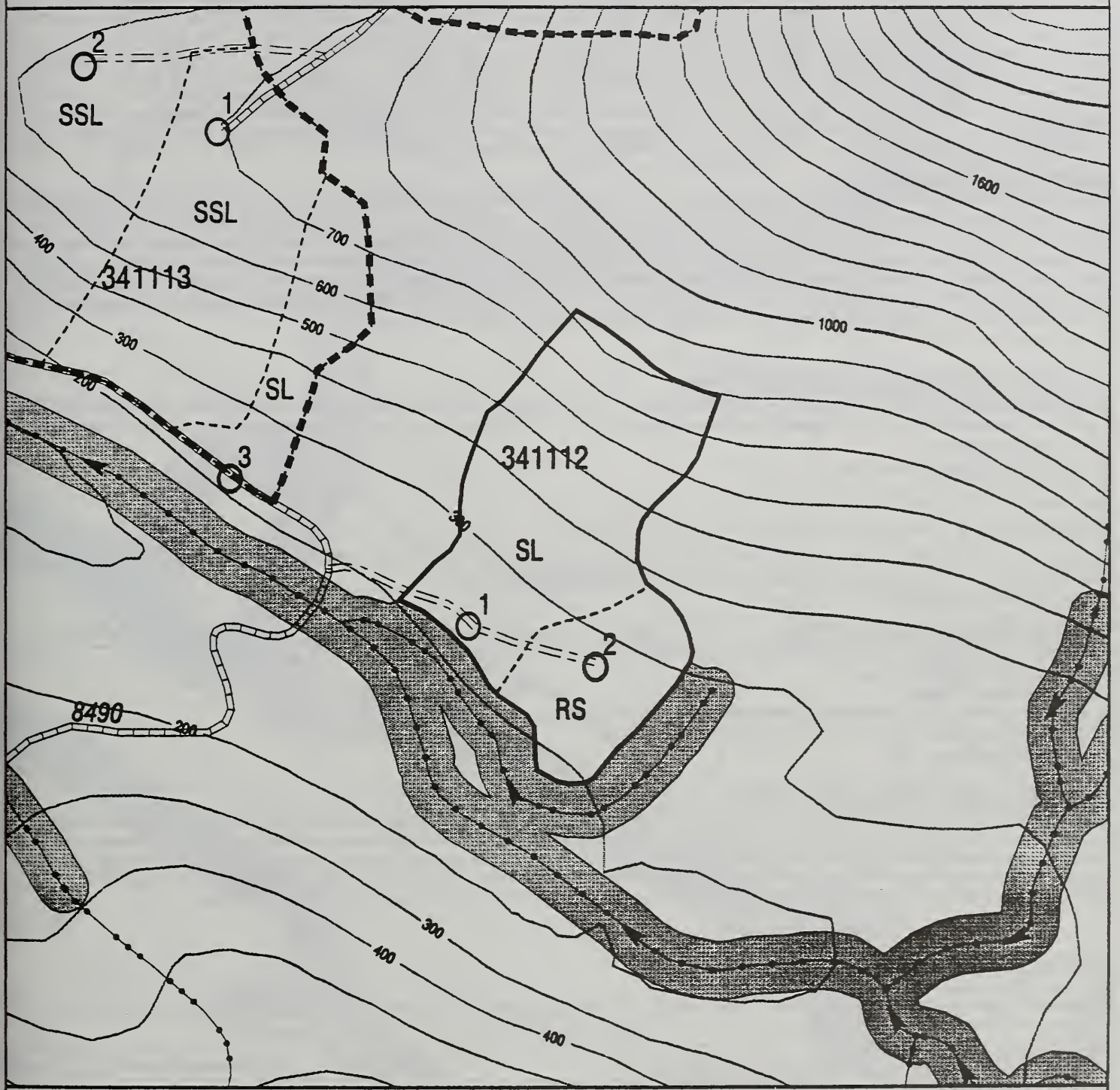
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341112 ALTERNATIVE(S): E

ACRES: 34.67 TOTAL NET MBF: 1439.7 QUAD(S): SUMA4 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 58 ROLL NO.: 1184 PRINT NO.: 159



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	84	UNIT #:	341113	MAP #:	130	ACRES:	71
AERIAL PHOTO YEAR:	1987	LIGHT LINE :	58			PHOTO #'S:	1184-159
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	14.2	20%	H	110-130	55	M	M	M	H	H
VC-6	39.9	37.9	54%	H	120	70	M	M	L	H	H
VC-7	57.3	18.4	26%	S	320-330	80	M	M	-	M	L
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		70.5	100%	-	-	70	M	M	Mistletoe	H	M

STAND CHARACTERISTICS

Mosaic of even aged functional stands in the w. hemlock and Sitka spruce series. This stand also has trace amounts of y. cedar in the overstory. The stand is composed of large, high quality sawtimber with moderate amounts of utility pulp. Slopes range from 10 to 70% on aspects from SW to NW which are bounded by two significant forks of Sandborn Creek. Overstory ages are 250 to 400 years old with moderate defect and significant amounts of mistletoe, mechanical/animal damage, defoliators and windthrow. The understory is 20-40% stocked with 20 to 40 year old w. hemlock and Sitka spruce which occur in groups and in particular in the SE portion of the unit with good vigor. Ground cover is sparse to moderately dense Vaccinium associated with skunk cabbage and shield fern. Significant new windthrow found in scattered small pockets. Site is , good to very good over the unit as a whole. Small cliff and rock outcrops at the top of the unit. Mistletoe is very heavy on upper slopes on ridgetop and less noticeable as you go down slope. Little or no mistletoe on the bottom 1/3 of unit. Reprod areas created by wind event 20-25 years ago.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: This unit requires skyline extensions to the south from landing #1 & #2 to allow for deflection over topographic breaks. Landing # 3 must guylines in buffer to the south and out of the unit to the east. Unit was altered to allow for the 300 foot buffer to the south and 120 buffer to the west. Not suitable for partial cut. 800 feet of easy spur construction

Visual Resource Management: Not Seen.

Soils / Geology: No comments listed on post field.

Fisheries / Watershed: The unit borders two class I streams west and south of unit.

Wildlife: Recommend retaining reserve trees and snags for habitat structure. Unit contains suitable habitat for hairy woodpecker and marten. Shelterwood with reserves was adopted for this unit. Avoid flight paths in mountain goat kidding habitat from mid May through June.

Cultural / Recreation / Subsistence: No Concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5, 6 & 7 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation wildlife by retention.
(4) Retain trees between settings on lower unit for seed source, vertical stand structure and cavity nesting habitat.
(5) Maintain water quality and fisheries habitat quality down stream.
(6) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northwest and southwest portion of the unit is bounded by class I streams (forks of Sandborn Creek). The southeast boundary is adjacent to a leave setting and the northeast boundary is the feasible extent of logging systems.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Unit boundary maintained at least 100' from Class I streams.
BMP 18.1: Reserve trees maintain habitat structure and provide snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from future blowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Interplant Sitka spruce by year 5, as needed, for site productivity and to lessen the effects of dwarf mistletoe.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341113 ALTERNATIVE(S): E

ACRES: 70.46 TOTAL NET MBF: 2556.7 QUAD(S): SUMA4 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 58 ROLL NO.: 1184 PRINT NO.: 159



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	84	UNIT #:	341114 + S	MAP #:	119, 126	ACRES:	82
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	58			PHOTO #'S:	1184-160
						ALTERNATIVE(S):	E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.2	9.2	11%	HC	220	45	L	MP	-	M	L
VC-5	23.7	34.3	42%	HC-H	250-220	65	M	M	-	H	M
VC-6	39.9	30.7	37%	S-H	310-320	80	H	M	-	H	M
VC-7	57.3	7.7	9%	H-S	120-320	90	M	G	-	H	L
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		82.0	100%	-	-	71	M	M	-	H	M

STAND CHARACTERISTICS

Mosaic of even aged functional and two storied stands in the w. hemlock, Sitka spruce and w. hemlock/y. cedar series. The stand is composed of medium and large, high quality sawtimber with moderate amounts of utility pulp. Slopes range from 20 to 60% on aspects from NW to SE and is split into two sub units by a fork of Sandborn Creek Overstory ages are 120 to 350 years old with moderately high defect and significant amounts of conk, root rot, mistletoe, mechanical/animal damage, defoliators and windthrow. The understory is <20% stocked with 20 to 40 year old w. hemlock and Sitka spruce which occur in groups throughout with fair vigor. Ground cover is sparse to dense Vaccinium associated with devils club, skunk cabbage and shield fern Scattered new windthrow found on upper slopes. Site is good to excellent over the unit as a whole.

The north sub unit has 250-300 year old w. hem/y. cedar series stand as well as a 120 year old w. hemlock stand on about 10 acres in the eastern mid portion. The south sub unit has w. hemlock and Sitka spruce series. This area includes a small pocket of root rot as well as some volume class 7 area which may have the highest site on the project. South unit is 28.9 ac

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: 70' Skyline proposed. Guyline anchors required within stream buffers. Tail trees will be required. This unit is not suitable for partial cut. Setting 341114s added. Snags a safety hazard. Two short spurs at landing one and two, for a total of 500 feet.

Visual Resource Management: Not Seen.

Soils / Geology: No concerns listed on post field comments.

Fisheries / Watershed: Viable resident & anadromous overwinter habitat. Large amounts of LWD create pools and good cover. However this material may deflect high flows into banks creating erosion problems. 150 foot buffers flagged. No fish observed during survey.

Wildlife: Recommend retaining live reserve trees and snags to maintain habitat structure and snag density. Unit contains marginal mountain goat habitat. Clearcut with reserves was adopted for this unit. Avoid flight paths in mountain goat kidding habitat from mid May through June.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 5, 6 & 7 with diseased, mature overstory to a vigorous young stand with remnant biological structure.
(2)Provide for programmed timber yield.
(3) Mitigation wildlife by retention.
(4) Retain trees between settings on lower unit for seed source, vertical stand structure and cavity nesting habitat.
(5) Maintain water quality and fisheries habitat quality down stream.
(6) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves and clearcut was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Reserve the area below and above road 8490 between settings 3 & 4 on the lower 1/3 of the unit. The selected silvicultural methods will provide a source of blowdown for ecological functioning, good phenotypic Sitka spruce for seed source, and vertical and cavity nesting habitat structure. Reserve will only a few spruce trees scattered between settings that will be feasible with logging systems. The balance of the unit is a clearcut. Other alternatives considered: Shelterwood may not be feasible with logging system and not advisable with dwarf mistletoe. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

North Sub unit is bounded on the east by the class II fork of Sanborn creek. The balance of the area is generally bounded by the feasible extent of proposed logging systems. A class II tributary has been buffered within the unit. The south sub unit is bounded on the west by the class II fork of Sanborn creek. To the east the unit is bounded by class IV soils and to the north and south by the feasible extent of logging systems.

Soil, Water, and Wildlife Conservation:

BMP 3.9: Split yard away from class II & III buffer in north sub unit. Directional fall away from buffer areas.
BMP 12.6: Unit boundary maintained at least 100' from class I and II streams.
BMP 18.1: Reserve trees provide habitat structure.

Forest Productivity Activities:

(1) Soil mixing and warming from future lowdown of reserve trees.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Interplant Sitka spruce by year 5, as needed, for site productivity and to lessen the effects of dwarf mistletoe.

MONITORING PLAN

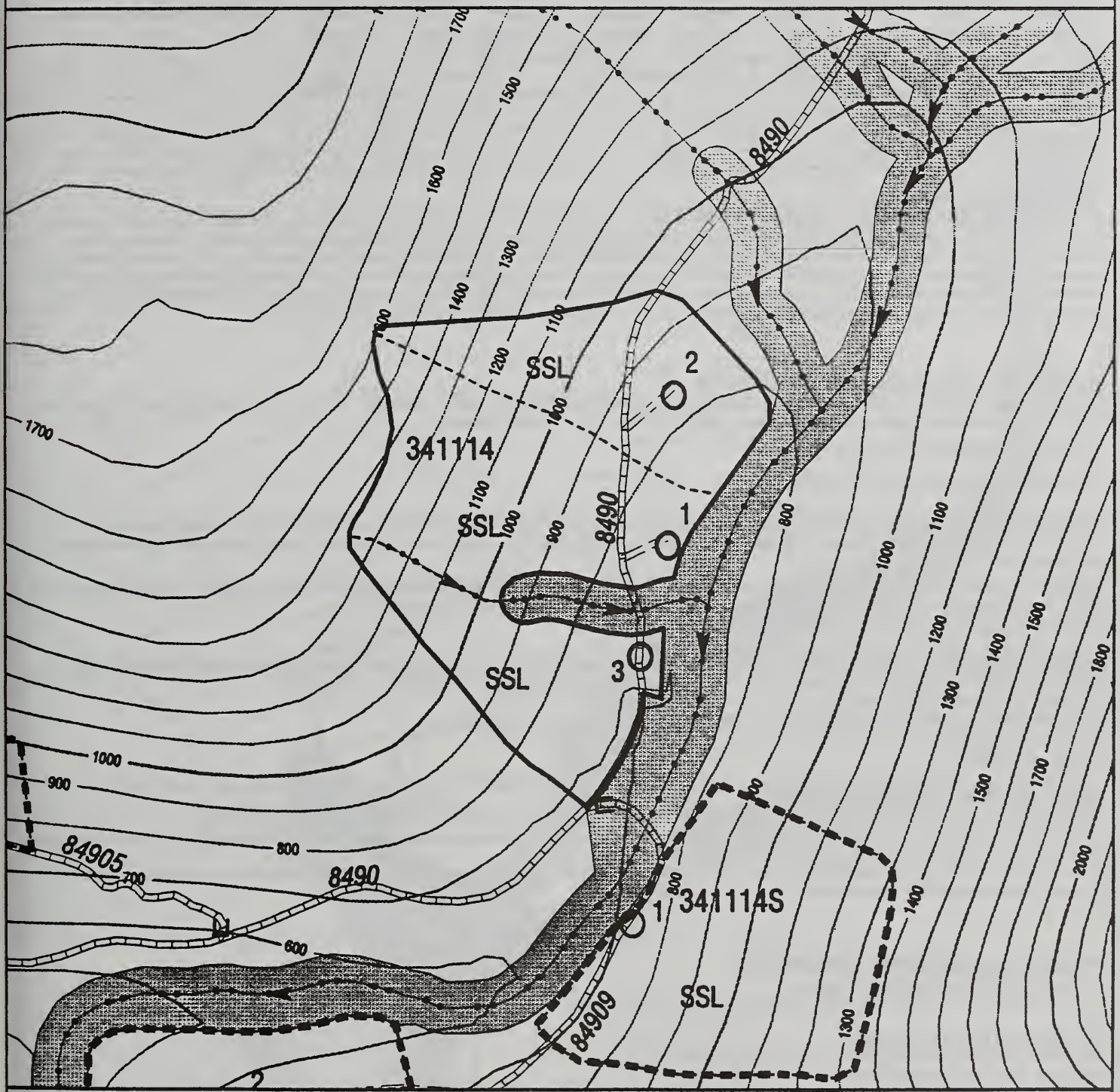
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341114 ALTERNATIVE(S): E

ACRES: 53.06 TOTAL NET MBF: 1194.8 QUAD(S): SUMA4 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 58 ROLL NO.: 1184 PRINT NO.: 160



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.22:11:21.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341115 MAP #: 103 ACRES: 47

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 58 PHOTO #'S: 1184-161

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	14.2	4.1	9%	HC	210	40	L	MP	L	M	L
VC-5	23.7	42.1	91%	HC-H	210-110	55	H	M	L	H	M
VC-6	39.9	0.3	1%	H	120	75	H	G	L	H	M
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		46.5	100%	-	-	54	H	M	Mistletoe	H	M

STAND CHARACTERISTICS

Two-storied uneven aged stand in the w. hemlock and w. hemlock/y. cedar series. This stand also has Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 90% on aspects from SW to SE which are bisected by 2 significant V-notch creeks and several smaller streams. The southeastern portion of the unit is bounded by a class II buffer for a fork of Sandbom creek. Overstory ages are 50 to 300 years old with moderate to high defect and significant amounts of conk, mistletoe, mechanical/animal damage and pockets of windthrow. The understory is 20-40% stocked with 20 to 100 year old W. hemlock and Sitka spruce which occur (in groups throughout with fair to good vigor. Ground cover is moderate to dense Vaccinium associated with devils club, shield fern and skunk cabbage. Scattered new windthrow found in pockets on upper slopes . Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Land #1 : 70' skyline; Landing #2 is continuous and will need running skyline. Landing # 3 is 90' skyline. Anchors for all settings OK. Not suited for partial cut. Snag retention safety issue. Approx. 3 sta. of temp road at landing # 1. Tail trees required.

Visual Resource Management: Not Seen.

Soils / Geology: No comments listed on post field.

Fisheries / Watershed: Class II stream along south side is large. Buffer was enlarged to 150' in some areas to accommodate this. Several channels bisect the unit. Approx.. 350 yards up stream from the south corner are large flood channels. Substrate indicates instability avoid landings in this area. Class III enters unit below LNG #2- recommend cont. landing.

Wildlife: Recommend retaining live reserve trees and snags for habitat structure and snag density. Unit contains marginal mountain goat habitat. Some opportunities will be used in this unit to retain vertical structure. Avoid flight paths in mountain goat kidding habitat from mid May through June.

Cultural / Recreation / Subsistence: No concems.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4 with diseased, mature overstory to a vigorous young stand.
(2) Provide for programmed timber yield.
(3) Mitigation of wildlife concems by unit configuration and size combined with mitigation's in adjacent units.
(4) Maintain water quality and fisheries habitat.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut was selected because: (1) Provides a high volume retum from a stand that is past its peak productivity.(2) Generate a new vigorous stand
(3) This relatively small unit is configured in a way as not to breakup the adjacent habitat structure for an extended distance. (4) A relatively small number of reserve trees will be retained, providing a source of blowdown for ecological functioning.
Other alternatives considered: Shelterwood not reasonable due to logging constrains and mistletoe infection. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit is bounded to the SE by a class II stream buffer and elsewhere by logical yarding limits.

Soil, Water, and Wildlife Conservation:

BMP 13.16: Directional falling away from buffers and class III V-notch.
BMP 13.3: Boundary maintained at least 100' from Class-II stream.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbances.
(2) Remove reproduction that is infected with dwarf mistletoe.
(3) Schedule precomercial thinning. Favor S. spruce and y. cedar when found. Remove trees with dwarf mistletoe when found.
4) Plant S. spruce after year 3 stocking survey if below 50 TPA- this will distribute in the stand a species which is resistant to dwarf mistletoe.

MONITORING PLAN

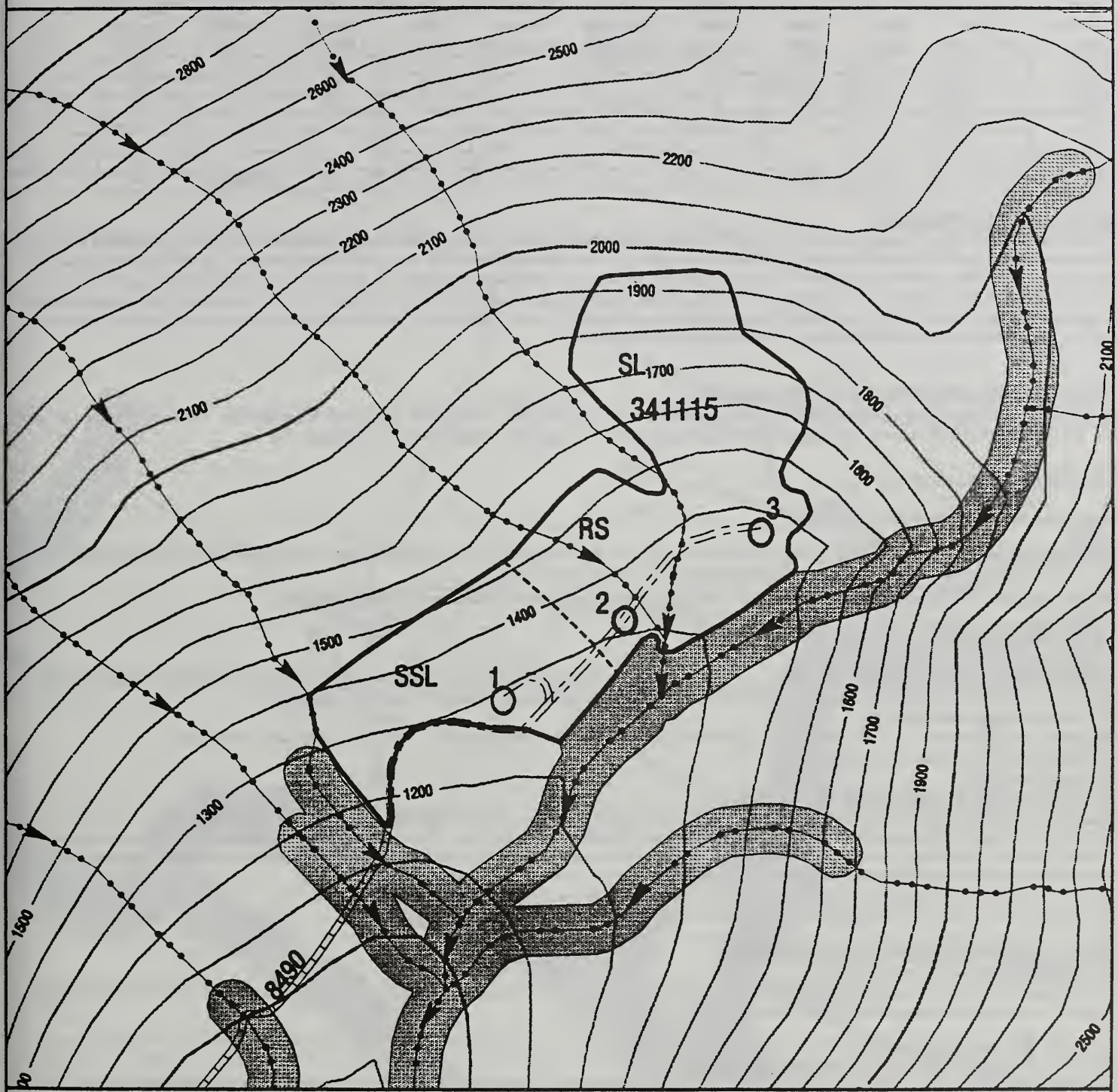
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341115 ALTERNATIVE(S): E

ACRES: 46.56 TOTAL NET MBF: 951.6 QUAD(S): SUMB4 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 58 ROLL NO.: 1184 PRINT NO.: 161



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 84 UNIT #: 341116 MAP #: 122 ACRES: 44

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 57 PHOTO #'S: 1184-151

ALTERNATIVE(S): E

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	33.8	77%	H	110-140	55	L	M	M	M	L
VC-5	23.7	0.3	1%	H	140	60	M	M	M	H	M
VC-6	39.9	9.7	22%	S	310-320	80	H	G	H	H	H
VC-7	57.3	-	-	-	-	-	-	-	-	-	-
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		43.8	100%	-	-	61	L	M	Mistletoe	M	L

STAND CHARACTERISTICS

Multiple storied stand in the w. hemlock, Sitka spruce series. The stand is composed of medium to large, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 90% on aspects from SW to S which are bounded by a class III V-notch creek to the west. The southern portion of the unit is bounded by a class I buffer on Sandborn creek. Overstory ages are 250 to 400 years old with high defect and significant amounts of conk, mistletoe, mechanical/animal damage and windthrow. The understory is 20-40% stocked with 20 to 50 year old W. hemlock which occur in groups throughout with poor to fair vigor. Ground cover is moderately dense Vaccinium associated with devils club and shield fern. Scattered new windthrow found throughout the unit. Site is good to very good over the unit as a whole. The site is higher than normal in the volume class 4 area because the stand is past its prime and highly defective.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Both settings require 90' skyline. (slackline system) Anchors good. Tail trees may be required for both settings. This unit is not suited for partial cut. The unit was modified (reduced in size) to reflect field verified logging plan. SE portion was dropped due to slope instability. La

Visual Resource Management: Not Seen.

Soils / Geology: No comments listed in post field.

Fisheries / Watershed: Unit is near a class I salmon stream to the south and a class III debris torrent at the western border. Pink salmon were actively spawning above the trib. Spawning ground downstream has been silted in from torrent. Larger buffer for class I stream.

Wildlife: Unit contains suitable mountain goat habitat. Avoid flight paths in mountain goat kidding habitat from mid May through June.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert partially understocked stand, volume class 4, 5 & 6 with diseased (mistletoe), mature overstory to a vigorous young stand.
(2) Provide for programmed timber yield.
(3) Mitigation of wildlife concerns by unit configuration and size combined with mitigation's in adjacent units. (Unit 341117 to the west was dropped)
(4) Maintain water quality, estuary and fisheries habitat.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut was selected because: (1) Provides a high volume return from a stand that is past its peak productivity.(2) Generate a new vigorous stand (3) This conforms well to the topography and will be unnoticeable with visual mitigation's in adjacent units. (4) A relatively small number of reserve trees will be retained, providing a source of blowdown for ecological functioning. (5) Unit was reduced in size by about 30% to provide large buffers for Sandborn creek and the adjacent estuary, avoid sensitive soils in the SE and northern portions and reduce the overall impacts in this generally sensitive area.
Shelterwood or reserves not feasible due to logging constrains and severe mistletoe infection.
Defer would not take advantage of timber yield and opportunity to replace this declining stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

North bounded by sensitive soils and the reach of logging systems. East is bounded by a reserve setting adjacent to unit 341113. The south boundary is the 300' buffer on Sandborn creek and estuary buffer. The west boundary is a class III creek/debris chute.

Soil, Water, and Wildlife Conservation:

BMP 13.16: Directional falling away from buffers and class III chute.

Forest Productivity Activities:

(1) Soil warming from opening the area.
(2) Remove reproduction that is infected with dwarf mistletoe at harvest.
(3) Schedule precomercial thinning. Favor S. spruce when found. Remove trees with dwarf mistletoe when found.
(4) Interplant Sitka spruce in the first year after harvest for site productivity and to lessen the effects of severe infection dwarf mistletoe.

MONITORING PLAN

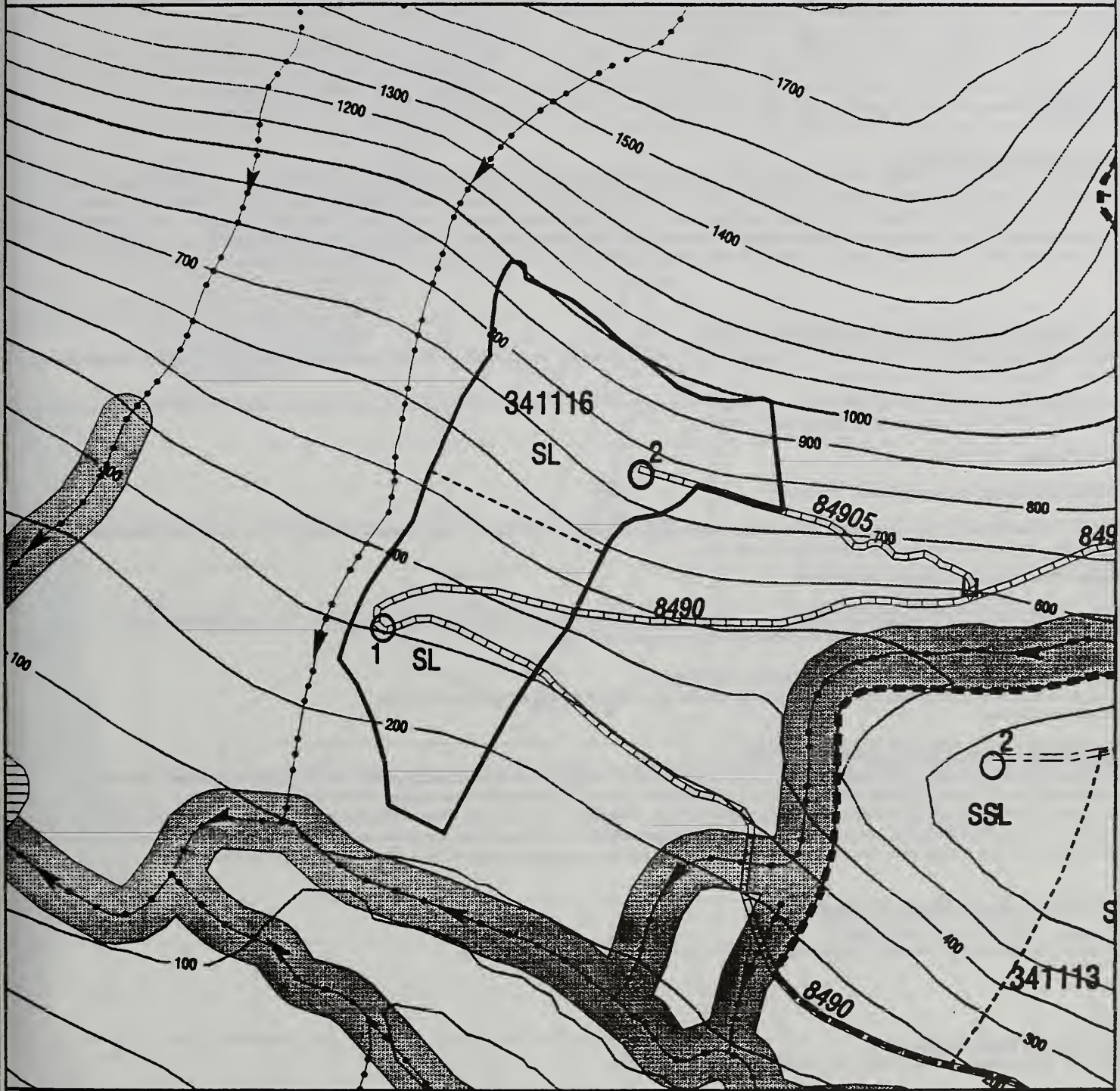
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341116 ALTERNATIVE(S): E

ACRES: 43.79 TOTAL NET MBF: 750 QUAD(S): SUMA4 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 57 ROLL NO.: 1184 PRINT NO.: 151



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.22:17:02.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	84	UNIT #:	341118	MAP #:	30	ACRES:	38
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	55			PHOTO #'S:	684-198
						ALTERNATIVE(S):	B, C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.2	2.4	6%	H	110	55	L	MP	-	M	L
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	39.9	34.0	89%	H	120-110	85	M	G	-	H	L
VC-7	57.3	1.9	5%	S	330	95	M	G	-	H	L
Low	2.3	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		38.3	100%	-	-	84	M	G	-	H	L

STAND CHARACTERISTICS

Multiple storied stand in the w. hemlock and Sitka spruce series. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 95% on aspects from NW to W with several small creeks. The eastern portion of the unit has an area of large S. spruce that is in volume class 7. Overstory ages are 150 to 400 years old with moderate defect and significant amounts of conk, mechanical/animal damage and some windthrow. The understory is 20-40% stocked with 20 to 80 year old W. hemlock and Sitka spruce which occur in groups throughout with fair to good vigor. Ground cover is sparse to moderately dense Vaccinium associated with devils club, shield fern, and skunk cabbage. Significant new windthrow found scattered throughout. Site is very good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline logging. Scattered green tree retention not feasible. Snag retention is a safety issue. Helicopter option has potential for selective types of cutting. Tailtrees required. 3-Sta. temp road.

Visual Resource Management: VQO Partial retention. Viewed in the background from small boat route. Unit has a small "billboard" affect. Consider group selection or other retention/ selective harvest. Scallop top or feather edges. Priority 1.

Soils / Geology: No concerns.

Fisheries / Watershed: No stream in unit. No concerns.

Wildlife: Suitable habitat for hairy woodpecker, brown creeper, marten and marginal habitat for mountain goat. Leave live reserve trees and snags for habitat structure and snag density. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Stand improvement, Removal of a portion of the overstory for programmed timber yield.
2) Moderate timber volume and value productivity.
3) Mitigation of background visual impact on Port Houghton small boat route.
4) Provide vertical structure and cavity nesting habitat with openings for the growth of existing and future reproduction.
5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves was selected because: (1) It provides a high volume return from a stand that is past its peak productivity. Since reserve trees are selected primarily from green cull volume, most of the net merchantable volume is available for harvest. (2) Reserve trees and shaping of the harvest unit will meet VQO. (3) Reserve trees are culls, which provide high-quality vertical and cavity nesting habitat structure. (4) Many of these cull reserve trees will blow down, providing important soil functions and seedbed for spruce. Other Alternatives: Clearcut and clearcut with reserves would not meet VQO, and would not provide as well for wildlife structural habitat. Group selection is not feasible with the logging system. Defer would not take advantage of timber yield and opportunity to replace the stand with a more vigorous stand.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit boundaries determined by Running skyline capabilities for three settings. Unit size limited for visuals.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Reserve trees maintain habitat structure and provide snag recruitment.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown of reserve trees.
2) Retain advanced reproduction.
3) If year 3 stocking survey indicates<50TPA of S. spruce interplant with S. spruce by year 4.
4) During precommercial thinning favor S. spruce and Y. cedar when found-remove dwarf mistletoe if found. Activities 1,3 and 4 are for Clearcut with reserves.

MONITORING PLAN

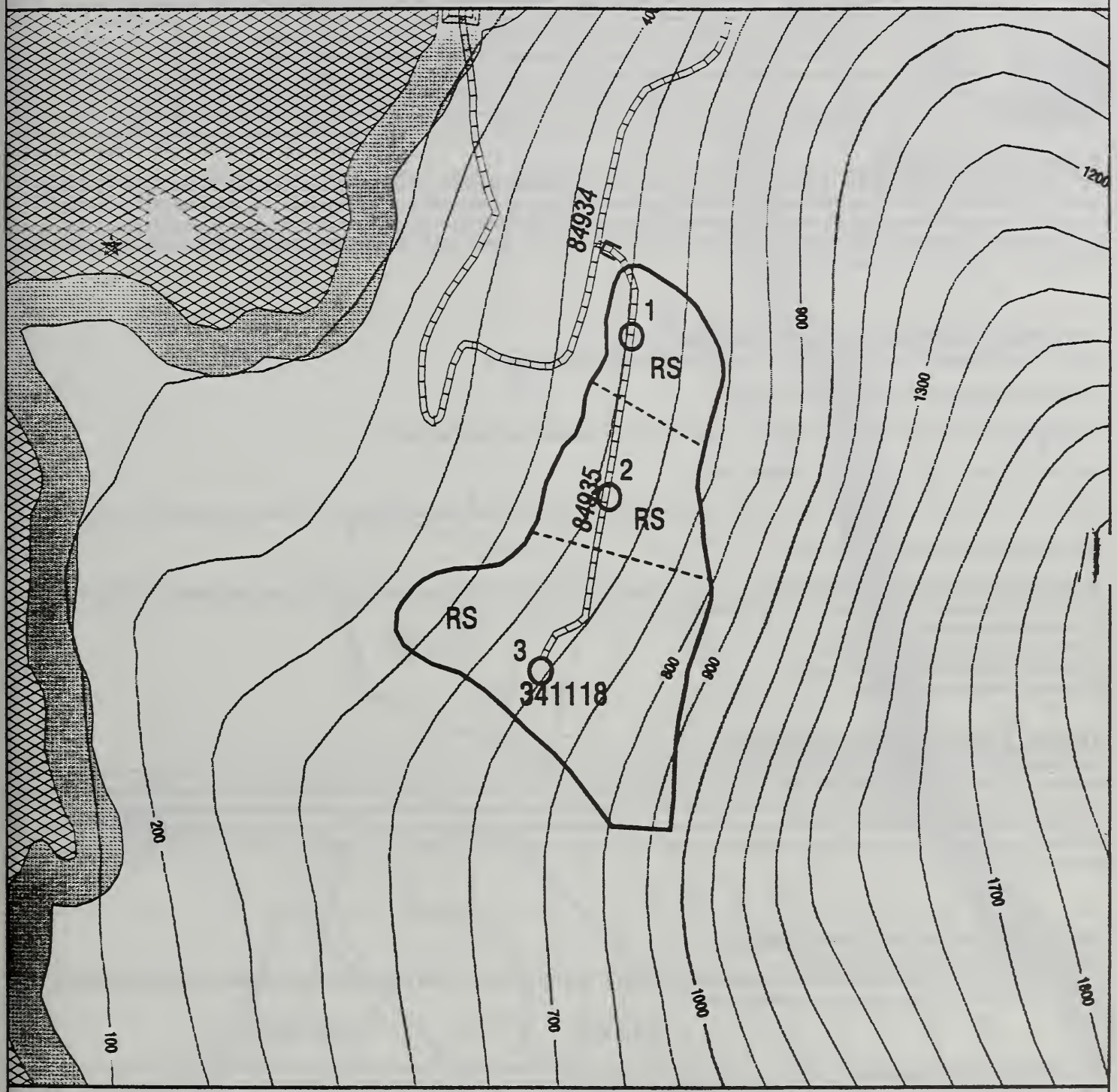
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 84 UNIT: 341118 ALTERNATIVE(S): B C

ACRES: 38.3 TOTAL NET MBF: 1286.1 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 198



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	80	UNIT #:	381131	MAP#	2	ACRES:	41
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	784-34

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	25	59%	MH	510	30-mh	H	M	-	M	M
VC-5	25.8	17	41%	MH	510	35-mh	H	M	-	H	M
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		41	100%	-	-	33	H	M	-	M	M

STAND CHARACTERISTICS

High-elevation stand, just below ridgetop, moderately steep, on SE aspect, with broken steep topography below 2100 ft.. Class 3 stream in V-notch bisects the unit and borders the south edge of the west extension. Muskeg borders the top of the unit. Risk of mass movement is generally moderate. Mountain hemlock/Vaccinium plant association. Functionally even-aged overmature mountain hemlock, 250-350 years old, with scattering of Sitka spruce. A patch of younger mountain hemlock (~110 yrs. old) at north end of unit was deleted from treatment area. Low to moderately productive site, Vol. Class 4 and 5. Average defect. Indications of old windthrow throughout stand; high risk to future windthrow. High regeneration potential.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Nearest possible landing 1 mi., on Goldbelt lands. Helicopter logging.

Visual Resource Management: Not seen - no constraints.

Soils / Geology: Portion of area initially classified as Class 4 soils; after field examination, reclassified as Class 3.

Fisheries / Watershed: No fish; no special concerns identified.

Wildlife: No special concerns noted. Opportunity for reserving live trees and snags for habitat structural diversity. Clearcut with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: None noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves best meets integrated resource objectives. Rationale: (1) Converts unit to more vigorous young stand. (2) Most of the net volume available will be harvested. (3) The VQO of Modification to be met. (4) Fish habitats downstream from the unit will be maintained through protection Class 3 stream afforded by helicopter logging. (5) Site quality will be maintained, due to increased soil functioning. Many of the reserve trees will blow down, creating favorable soil conditions for reduction of podzolization and favorable seedbeds for spruce. Reserve trees also provide vertical diversity for cavity nesting habitat and seed sources for higher value timber species. (6) Helicopter logging will allow the unit to be logged without road building, which is not cost effective for this unit. In total, the selected alternative meets all integrated resource objectives.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The east boundary was modified to include area declassified from Soil Class 4. Northern portion of unit was dropped due to younger timber and low volume. Western boundary conforms to the ridgetop and edge of muskeg.

Soil, Water, and Wildlife Conservation:

BMP 13.9: Helicopter logging will mitigate any concerns. No road building will take place in the unit.
BMP 13.2: Harvest design ensures securing water quality and soil productivity.
BMP 18.1: Reserve trees provide habitat diversity and cavity nesting sites.

Forest Productivity Activities:

Soil mixing from windthrow of reserve trees is expected to reduce podzol development on limited areas. Exposure of mineral soil on windthrow mounds is expected to provide favorable seedbed for spruce.

MONITORING PLAN

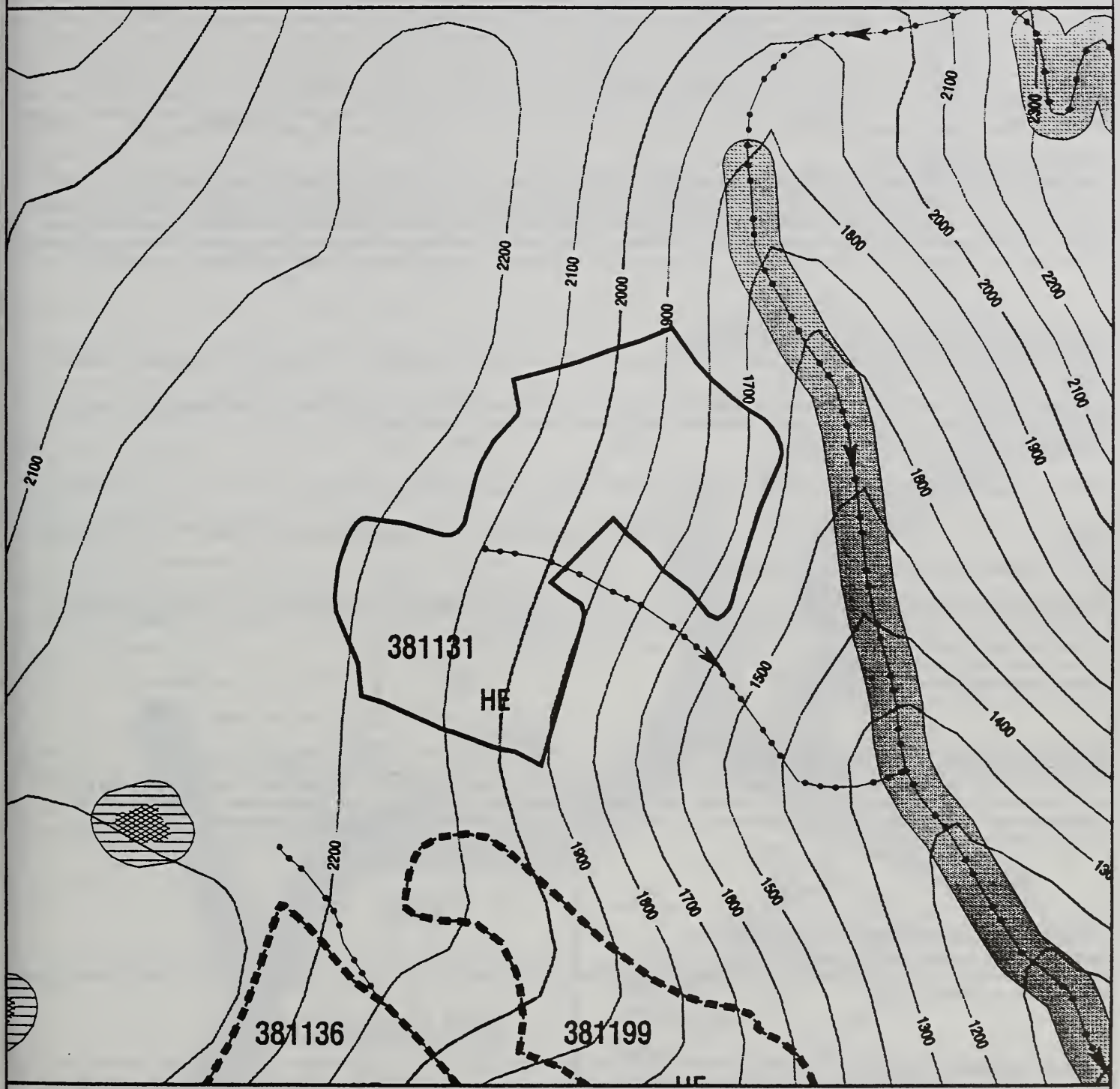
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 80 UNIT: 381131 ALTERNATIVE(S): D

ACRES: 41.14 TOTAL NET MBF: 632.2 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 784 PRINT NO.: 34



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	80	UNIT #:	381133	MAP#	8	ACRES:	49
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-42

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	28	57%	XC	410-420	40	M	M	-	M	L
VC-5	25.8	18	36%	WH-XC	110-410	50	M	M	L	H	M
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	4	7%	XC	420-430	30	L	P	-	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		49	100%	-	-	41	M	M	mistletoe	M	M

STAND CHARACTERISTICS

Lower-slope unit, moderately steep, on W to SW aspect. A Class 2 stream in a V-notch borders the south boundary. Western hemlock forest type, mixture of western hemlock/Vaccinium and western hemlock/vaccinium-devils club association. Functionally even-aged overmature (300 yrs.+) mixture of mountain hemlock, western hemlock, and scattered Sitka spruce. Some pockets of younger yellow cedar are found in west portion of unit. Low to moderately productive site, mostly Vol. Class 4 and 5, open stocking. Scattered snags and high defect throughout the unit. Little evidence of recent windthrow; moderate risk of windthrow following harvest. Overstory age is generally 350 years and older. Understory vegetation generally dense, with Vaccinium, skunk cabbage, and devils club. Scattered conifer advance growth in poor condition.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Not suitable for partial cutting. Setting 2 to be yarded across private land after private land is logged. Guylines in stream buffers. Tailholds required outside unit. A 15-station temporary road is required.

Visual Resource Management: VQO is Modification as viewed from background from small boat route in Port Houghton. Concerns for cumulative impact of harvest combined with nearby, older logging on Goldbelt lands. Unit location in valley, oblique to view, helps mitigate visual impact.

Soils / Geology: No special concerns were noted.

Fisheries / Watershed: Class 2 stream adjacent to south and east boundaries needs to have standard buffer for protection.

Wildlife: Retention of some snags and reserve trees would add to structural diversity to the benefit of wildlife. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting best meets integrated resource objectives, especially if some reserves can be accommodated. Rationale: (1) Converts unit to more vigorous young stand. (2) Most of the net volume available will be harvested. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by buffering Class 2 stream and protecting V-notches. (5) Site quality will be maintained or improved, due to increased soil functioning. (6) Clearcutting is operationally feasible.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The south boundary of the unit follows the buffered Class 2 stream. The west boundary was modified to exclude rock bluff and steep slopes. On the east, the boundary was pulled back from the stream buffer.

Soil, Water, and Wildlife Conservation:

BMP 13.2, 13.6, 13.16, 13.9: Boundary modification to eliminate excessively steep areas will address soils concerns. Buffering of adjacent streams has reduced concerns with V-notches. Although harvest system will not result in deep soil disturbance, the organic layer will be breached where possible outside of sensitive areas to prepare the site for regeneration. This is not expected to create erosion problems.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance will result in increased soil biological activity and decomposition rate, potentially increasing productivity. Natural regeneration of Sitka spruce and yellow cedar by retention of seed trees on unit edges.

MONITORING PLAN

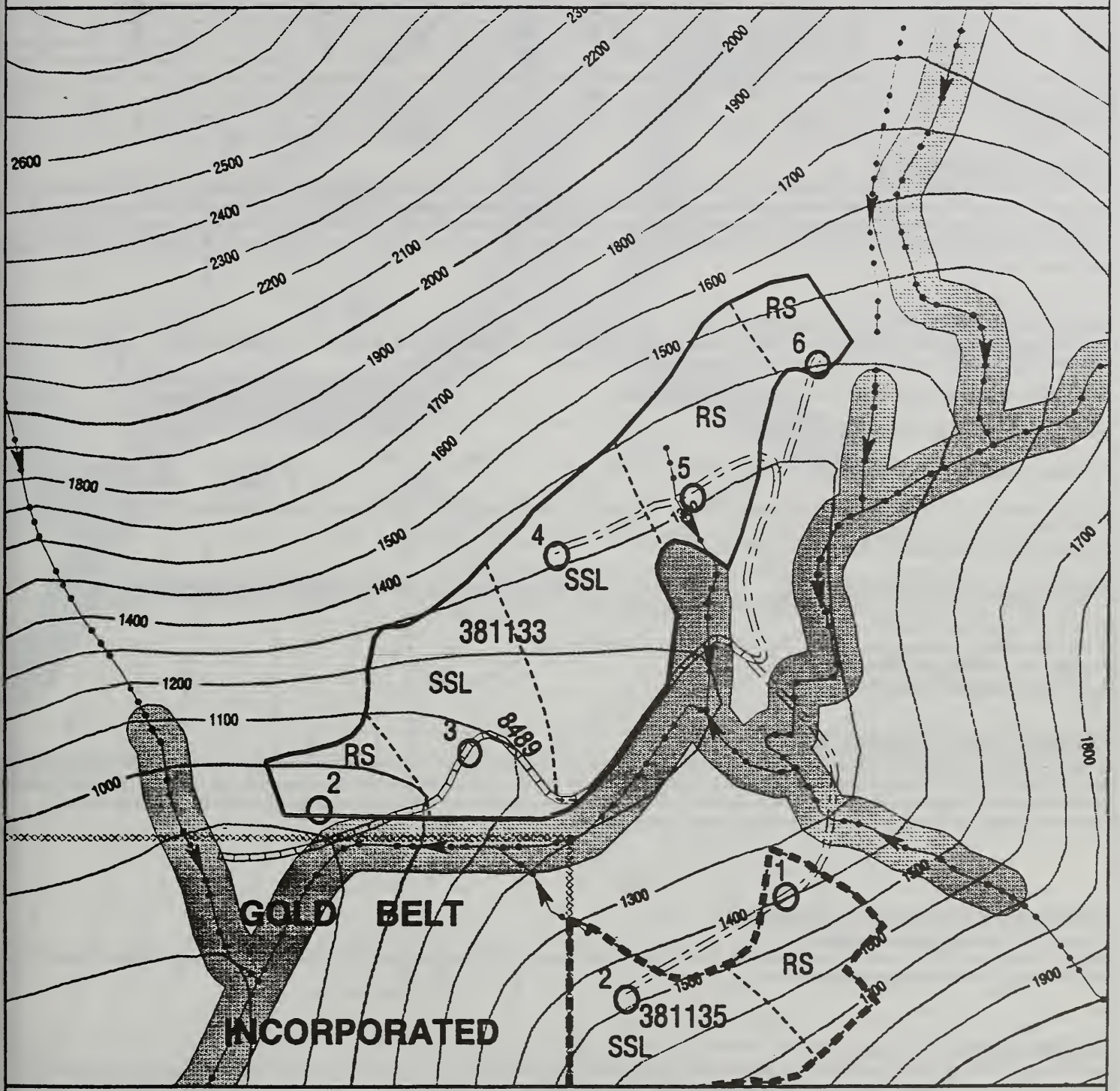
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 80 UNIT: 381133 ALTERNATIVE(S): B C

ACRES: 48.96 TOTAL NET MBF: 706.4 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 42



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	80	UNIT #:	381135	MAP#	9	ACRES:	20
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-32

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	4	19%	MH	510	38-mh	M	MP	-	M	M
VC-5	25.8	8	39%	MH	510	40-mh	M	M	-	M	M
VC-6	32.8	9	43%	MH-S	510-340	45-mh	M	M	-	H	M
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		20	100%	-	-	42	M	M	-	M	M

STAND CHARACTERISTICS

Lower-slope unit, moderately steep, on N to NW aspect. A Class 2 stream in a V-notch passes through the area immediately north of the unit. Upper slopes are steep and dissected by small V-notch creek. Western hemlock forest type, mountain hemlock/Vaccinium plant association. Functionally even-aged overmature (300 yrs.+) mixture of mountain hemlock, western hemlock, and scattered Sitka spruce. Variable productivity within unit; lower elevation extensions Volume Class 4, but mid-unit is Vol. Class 6. High defect throughout the unit. High windthrow risk in upper slopes. Overstory age is generally 300 years and older. Understory contains moderately dense Vaccinium, skunk cabbage, and devils club.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Not suitable for partial cutting. Skyline logging. Tailholds required outside unit. Tail trees required. An 18-station temporary road with 72" culvert or temporary bridge is needed for access. Grades vary from 12% adverse to 15% favorable.

Visual Resource Management: Most of unit is not seen. VQO is Modification.

Soils / Geology: No special concerns were noted.

Fisheries / Watershed: Partial suspension should protect impacts to streams.

Wildlife: Retention of some snags and reserve trees would add to structural diversity to the benefit of many wildlife species. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting best meets integrated resource objectives, especially if some reserves can be accommodated on unit edges. Rationale: (1) Converts unit to more vigorous young stand. (2) Most of the net volume available will be harvested. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by buffering Class 2 stream and protecting V-notches. (5) Site quality will be maintained or improved, due to increased soil functioning. (6) Clearcutting is operationally feasible; for the unit as a whole, reserve trees cannot be compatibly retained.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The NW boundary was modified to exclude low volume area. The boundary was otherwise modified to exclude steep slopes and to conform to logical yarding boundaries. The west unit boundary is the boundary of the national forest.

Soil, Water, and Wildlife Conservation:

BMP 13.2, 13.9, 13.16: Boundary modification to eliminate excessively steep areas will address soils concerns. Buffering of adjacent streams has reduced concerns with V-notches. Although harvest system will not result in deep soil disturbance, the organic layer will be breached where possible outside of sensitive areas to prepare the site for regeneration. This is not expected to create erosion problems.

Forest Productivity Activities:

Soil mixing and warming from logging disturbance will result in increased soil biological activity and decomposition rate, potentially increasing productivity. Natural regeneration of Sitka spruce and yellow cedar by retention of seed trees on unit edges.

MONITORING PLAN

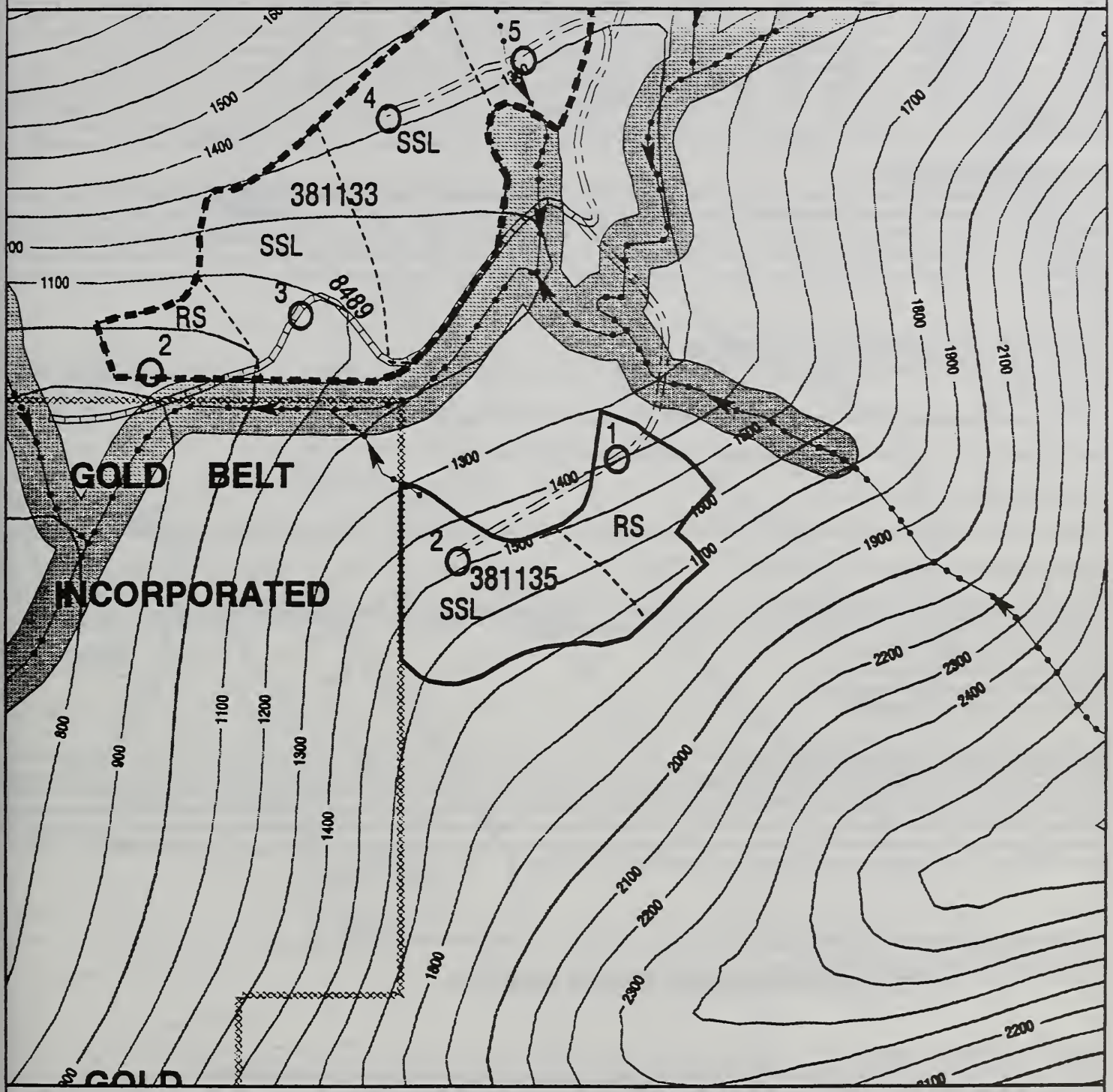
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 80 UNIT: 381135 ALTERNATIVE(S): B C

ACRES: 19.98 TOTAL NET MBF: 449.7 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 41



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/22/95.11:27:16.Tue

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	80	UNIT #:	381136	MAP#	7	ACRES:	32
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	784-35

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	17	53%	XC	410-420	45	M	MP	L	M	M
VC-5	25.8	-	-	-	-	-	-	-	-	-	-
VC-6	32.8	9	29%	WH	110-120	60	H	M	L	H	M
VC-7	68.2	5	17%	WH	120-140	62	H	G	L	H	M
Low	5.0	0	1%	XC	420-430	40	L	P	-	L	M
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		32	100%	-	-	52	M	M	mistletoe	M	M

STAND CHARACTERISTICS

Mid-slope stand, beginning just below ridgetop and extending downslope along Class 3 stream. Moderately steep, on SE aspect. Muskeg borders the top of the unit. Risk of mass movement is generally moderate. Western hemlock forest type. Upper slopes dominated by mountain hemlock, giving way to western hemlock below 1600 ft. elevation; minor stocking of Sitka spruce throughout. The dominant canopy is generally in excess of 300 years old, with a functionally even-aged structure. Although most of the stand is Volume Class 4, there is appreciable area of high site. Lower sites are primarily the upslope mountain hemlock area, where the timber is highly defective. Little evidence of recent windthrow; moderate risk of windthrow following harvest. Understory vegetation is moderately stocked with Vaccinium, with patches of devils club, skunk cabbage, and deer cabbage.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter logging is more economical for this unit than cable logging because road construction is not required. Pulp logs are uneconomical for helicopter logging.

Visual Resource Management: Area is in the background view of small boat route. VQO of Modification.

Soils / Geology: Sensitive soils along NE and SW boundaries; recommend partial cutting in these areas.

Fisheries / Watershed: No concerns noted.

Wildlife: No special concerns noted. Opportunity for reserving live trees and snags for habitat structural diversity. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves best meets integrated resource objectives. Rationale: (1) Converts unit to more vigorous young stand. (2) More than 80% of net volume available will be harvested. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by buffering Class 3 stream and protecting vegetation in the buffered V-notch. (5) Site quality will be maintained or improved, due to increased soil functioning resulting from blowdown and, to some extent, soil warming. Reserve groups will provide structural diversity and ecological functions. (6) Helicopter logging will be most economically feasible, considering effects on reduced road construction. All told, the selected alternative meets the integrated resource objectives.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

A portion of the boundary was designed to exclude Class 4 soils and a buffered Class 3 stream.

Soil, Water, and Wildlife Conservation:

BMP 13.16, 13.2: Buffer will protect the Class 3 stream on northwest boundary. Helicopter logging will ensure that soil and water objectives are met.
BMP 18.1: Snag and reserve tree retention provide habitat diversity, cavity nesting sites, and snag recruitment sources.

Forest Productivity Activities:

Soil mixing from windthrow of reserve trees is expected to reduce podzol development on limited areas. Exposure of mineral soil on windthrow mounds is expected to provide favorable seedbed for spruce.

MONITORING PLAN

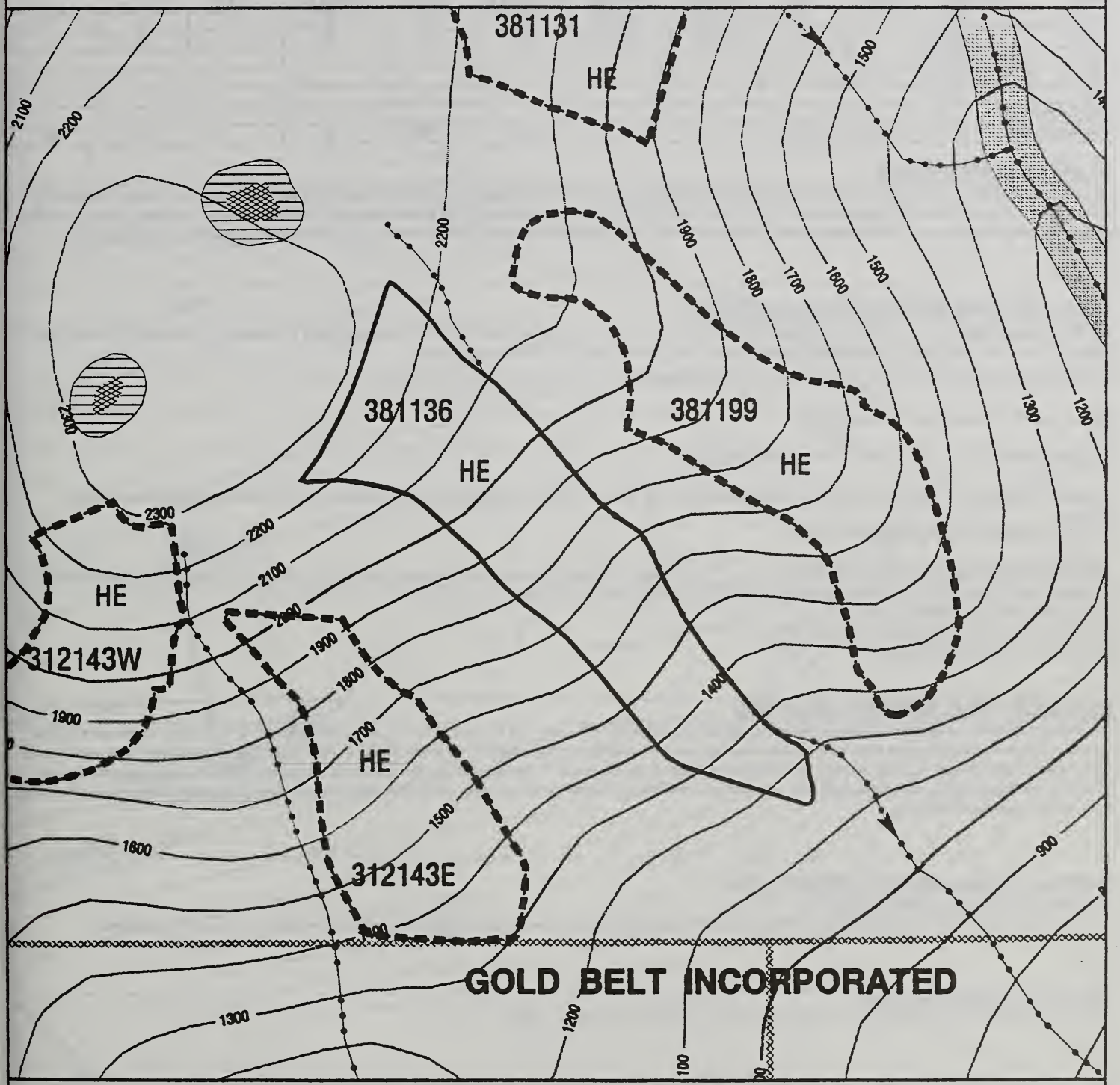
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
	*Note that PCT is probably impractical, due to high amt. of defective logs on ground w/ heli.logging.		

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 80 UNIT: 381136 ALTERNATIVE(S): D

ACRES: 31.49 TOTAL NET MBF: 749.3 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 784 PRINT NO.: 35



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	80	UNIT #:	381137	MAP#	13	ACRES:	75
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	53			PHOTO #'S:	684-33

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	68	91%	S-WH	390-140	45	M	M	-	M	M
VC-5	25.8	7	9%	S-WH	390-140	50	M	M	-	M	H
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		75	100%	-	-	45	M	M	-	M	M

STAND CHARACTERISTICS

The unit is located above a Class 3 stream. Topography is broken, with gentle benches connected by steep slopes on SW to SE aspects. Boggy conditions in south central portion of unit. Western hemlock forest type, with Vaccinium and other shrub understory. Diverse stand of western hemlock, mountain hemlock, and Sitka spruce, with older component 350-years or more. Low site productivity, Vol. Class 4 and 5, with portions of the stand highly defective . Moderate windthrow potential. High regeneration potential.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Not suitable for partial cutting in the unit as a whole. Slackline yarding. Guylines at landings 2 and 5 external to unit. Split yarding on drainages. Temporary road required. Some rock sources available. One or more side drainages may require split yarding.

Visual Resource Management: VQO is Modification; the area is not seen from the small boat route in Port Houghton.

Soils / Geology: No special concerns were noted.

Fisheries / Watershed: No fish present in stream adjacent to unit.

Wildlife: Opportunities for retaining snags and green trees would enhance structural diversity for wildlife. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

The selected alternative is clearcutting, best suited to this unit for these reasons: (1) It converts the area to more vigorous young stand. (2) Virtually all of the net available volume will be harvested. (3) Since the area is not seen from the selected viewpoints, it will meet VQO of Modification. (4) Site quality will be maintained. Soil warming will increase decomposition rate and may maintain or increase productivity of the new stand. Note that, although the prescription is clearcutting, there will be opportunities for feathering unit edges, leaving unharvested patches, and scattered reserves to mitigate visual concerns. Other silvicultural methods that would leave substantially more leave trees are not operationally feasible.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The area was laid out to follow timber type boundaries and to conform with topography. The boundary was drawn back from the Class 3 stream to the first bench.

Soil, Water, and Wildlife Conservation:

BMP 13.2: Timber harvest design secures water quality, soil productivity, and minimizes erosion.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production.

MONITORING PLAN

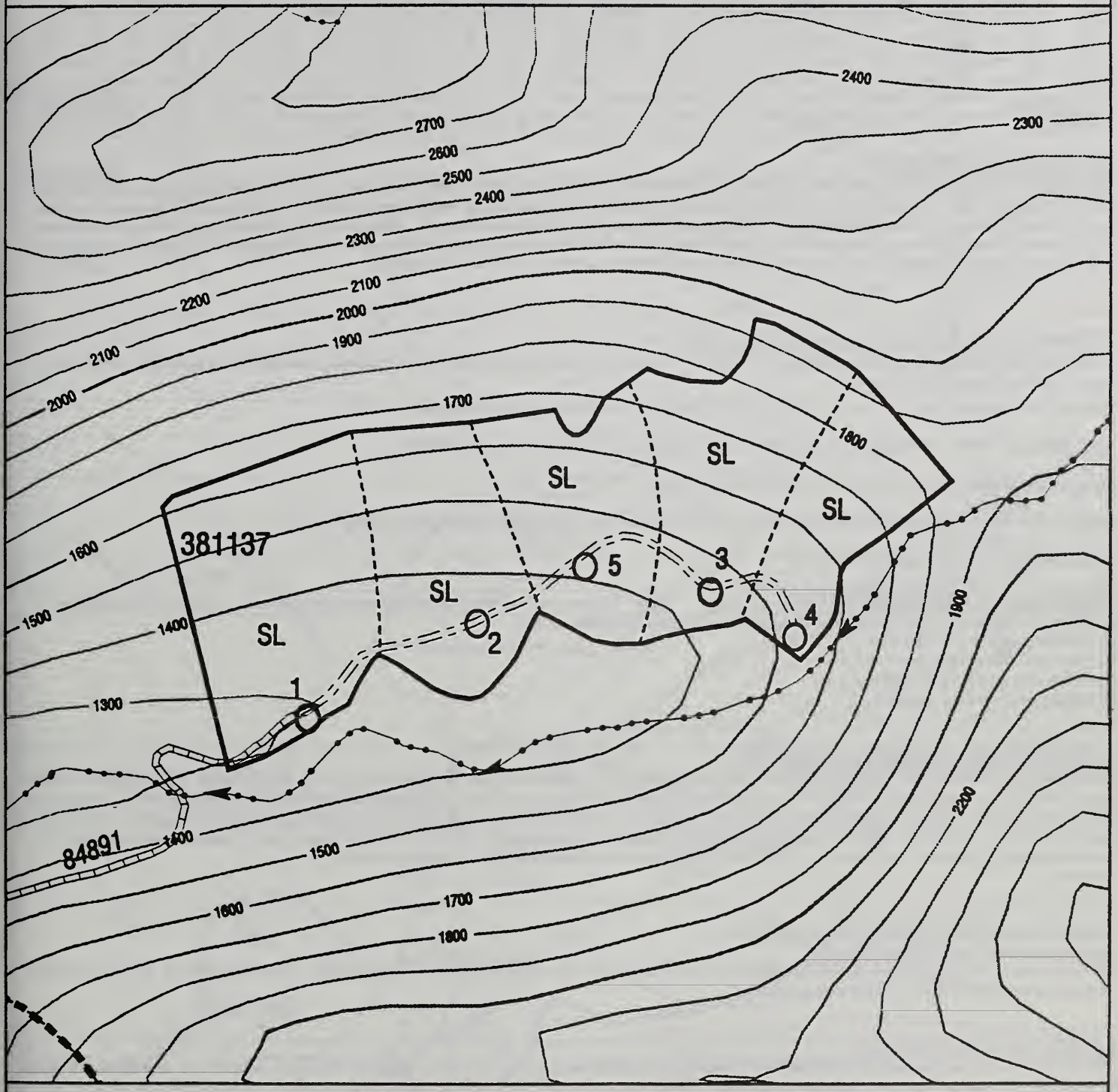
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 80 UNIT: 381137 ALTERNATIVE(S): B C D

ACRES: 77.35 TOTAL NET MBF: 920.2 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 33



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	80	UNIT #:	381139	MAP#	19	ACRES:	28
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-39

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	13	46%	XC	410-430	47	M	M	-	M	L
VC-5	25.8	15	54%	WH	110-130	60	H	M	-	H	L
VC-6	32.8	-	-	-	-	-	-	-	-	-	-
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		28	100%	-	-	54	H	M	-	H	L

STAND CHARACTERISTICS

Mid-slope unit, moderately steep, on NW to SW aspect, adjacent to heavily-logged native corporation lands. Slopes range from moderate to steep. Western hemlock forest type, with Vaccinium and other shrub understory. Functionally even-aged stand of western hemlock, mountain hemlock, and Sitka spruce, with older component 350-years or more. Low site productivity, Vol. Class 4 and 5. Moderately defective . Moderate windthrow potential. High regeneration potential.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Not suitable for partial cutting on much of the area. Landing 3 may require artificial anchors. Temporary road construction required.

Visual Resource Management: VQO is Partial Retention. Two northern settings are unseen from small boat route; southern setting is viewed in background. If clearcut, the cumulative impact of this unit, combined with prior harvest on Goldbelt lands, would result in not meeting VQO.

Soils / Geology: No special concerns were noted.

Fisheries / Watershed: No concerns.

Wildlife: Retention of snags and green trees would benefit habitats for some species, particularly cavity-using birds. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

The selected alternative is shelterwood with reserves, best suited to this unit for these reasons: (1) Converts the area to more vigorous young stand. (2) A high proportion of the net available volume will be harvested, since many of the reserves will be cull trees. (3) It will meet or exceed the VQO for the unit, and retention of leave trees will help to mitigate the heavy cutting on adjacent private lands. (4) Site quality will be maintained. Blowdown of reserve trees will provide soil ecological functions, and standing reserves will provide wildlife habitat and vertical stand structure. Soil warming will increase decomposition rate and may maintain or increase productivity of the new stand. Other alternatives: Clearcutting and clearcutting with reserves would provide more harvestable volume, but would not meet VQO to the degree needed. Group selection is impractical for an area this small and exposed directly to winds from the ocean. Deferring treatment would forego the opportunity for programmed harvest during the current entry.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit was reduced in size to separate an area of low productivity and high wildlife use. In addition, part of the original unit was split off to form Unit 381140.
The remainder of the unit boundary configuration was designed to conform with timber types and logical harvest system layout.

Soil, Water, and Wildlife Conservation:

No special concerns or direction.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Blowdown of reserves will provide soil ecological functions and increase exposure of mineral soil for regeneration of spruce. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production.

MONITORING PLAN

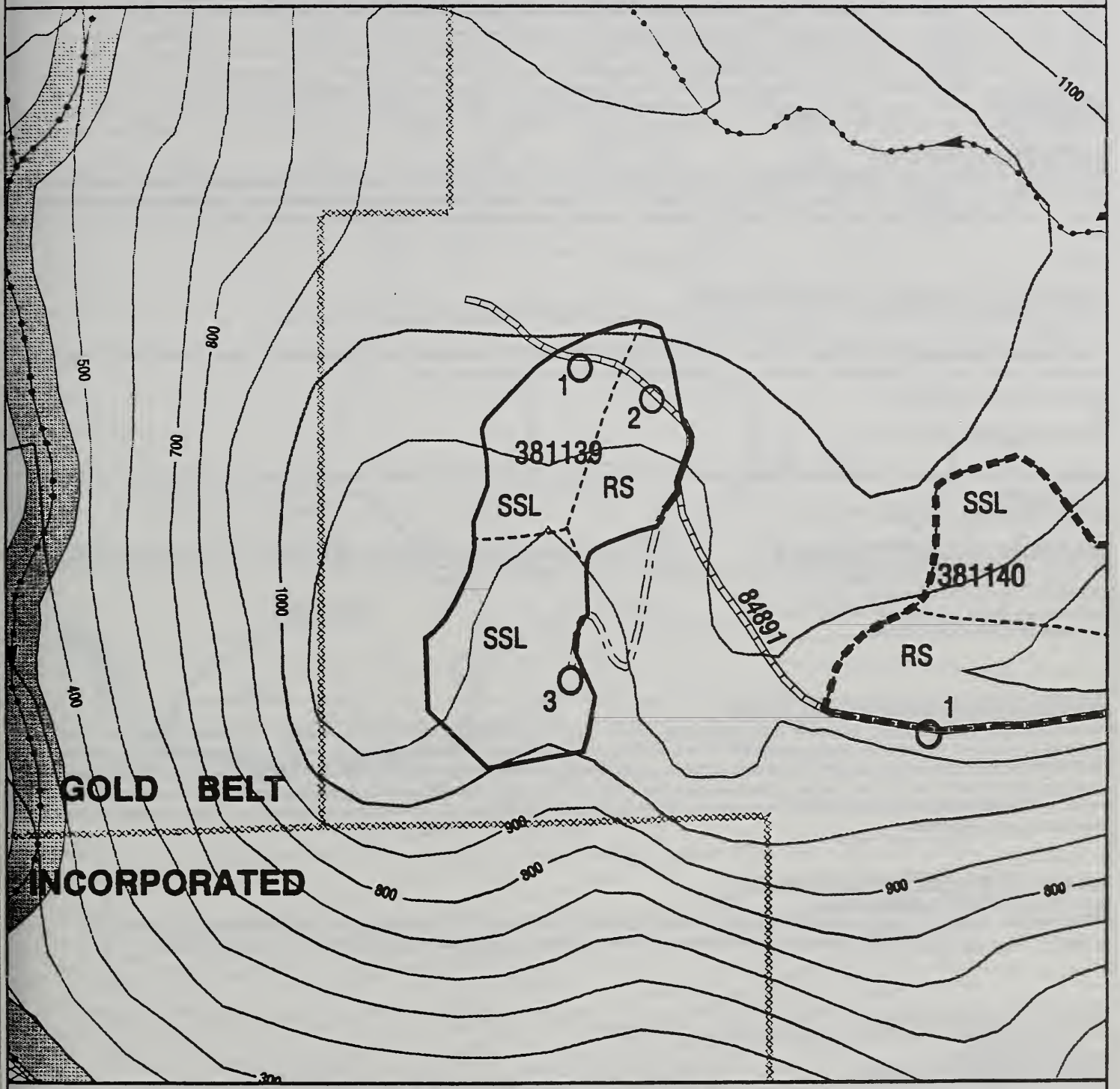
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 80 UNIT: 381139 ALTERNATIVE(S): B C D

ACRES: 28.36 TOTAL NET MBF: 472.2 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 52 ROLL NO.: 684 PRINT NO.: 40



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	80	UNIT #:	381140	MAP#	18	ACRES:	75
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	52			PHOTO #'S:	684-39

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	25	33%	XC	410-430	47	M	M	-	M	L
VC-5	25.8	-	-	-	-	-	-	-	-	-	-
VC-6	32.8	50	67%	WH	110-130	70	H	M	-	H	L
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		75	100%	-	-	62	H	M	-	H	L

STAND CHARACTERISTICS

Mid-slope unit, moderately steep, on NW to SW aspect, close to heavily-logged native corporation lands. Slopes range from moderate to steep. Western hemlock forest type, with Vaccinium and other shrub understory. Functionally even-aged stand of western hemlock, mountain hemlock, and Sitka spruce, with older component 350-years or more. Low site productivity, Vol. Class 4 and 5. Moderately defective . Moderate windthrow potential. High regeneration potential. (This unit was formerly a part of Unit 381139.)

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Not suitable for partial cutting on much of the area. Limited temporary spur road construction required.

Visual Resource Management: VQO is Partial Retention. Two northern settings are unseen from small boat route; southern setting is viewed in background. If clearcut, the cumulative impact of this unit, combined with prior harvest on Goldbelt lands, would result in not meeting VQO.

Soils / Geology: No special concerns.

Fisheries / Watershed: No concerns.

Wildlife: Retention of snags and green trees would benefit habitats for some species, particularly cavity-using birds. Some opportunities will be used in this unit to retain vertical structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

The selected alternative is clearcutting, best suited to this unit for these reasons: (1) Converts the area to more vigorous young stand. (2) Virtually all of the net available volume will be harvested. (3) Two of the logging settings are not seen from the water, and will meet VQO of Modification. Although clearcutting of the southern unit will not meet Partial Retention, opportunistic retention of leave trees will help to mitigate the heavy cutting on adjacent private lands. (4) Site quality will be maintained. Soil warming will increase decomposition rate and may maintain or increase productivity of the new stand. Note that, although the prescription is clearcutting, there will be opportunities for feathering unit edges, leaving unharvested patches, and scattered reserves to mitigate visual concerns. Other silvicultural methods that would leave substantially more leave trees are not operationally feasible.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit was reduced in size to separate an area of low productivity and high wildlife use. In addition, part of the original unit was split off to form Unit 381139. The remainder of the unit boundary configuration was designed to conform with timber types and logical harvest system layout, and to exclude unstable soils.

Soil, Water, and Wildlife Conservation:

BMP 18.1: Unit reconfigured to avoid area of high wildlife use.

Forest Productivity Activities:

Soil warming will increase biological activity and potentially increase productivity. Logging disturbance could reduce podzol development. Increase in spruce regeneration is expected to increase timber production.

MONITORING PLAN

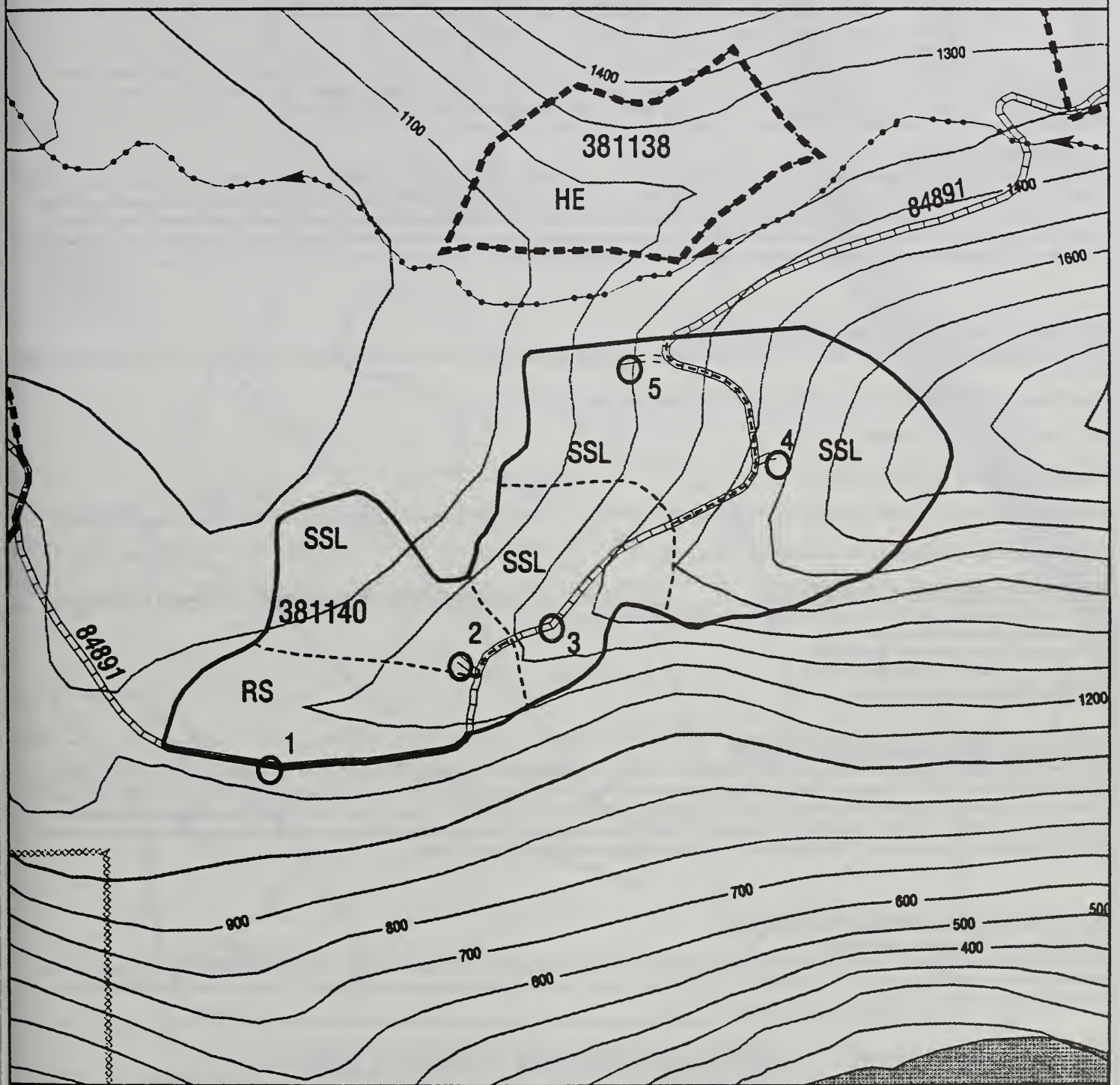
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 80 UNIT: 381140 ALTERNATIVE(S): B C D

ACRES: 75.21 TOTAL NET MBF: 1721.4 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 53 ROLL NO.: 684 PRINT NO.: 34



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	80	UNIT #:	381199	MAP#	5	ACRES:	31
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	51			PHOTO #'S:	784-35

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.0	7	23%	XC	410-420	40	M	M	-	M	M
VC-5	25.8	-	-	-	-	-	-	-	-	-	-
VC-6	32.8	24	77%	WH	120-130	55	M	M	-	H	M
VC-7	68.2	-	-	-	-	-	-	-	-	-	-
Low	5.0	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**31**	**100%**	-	-	**51**	**M**	**M**	-	**H**	**M**

STAND CHARACTERISTICS

Mid-slope stand, beginning just below ridgetop and extending downslope. Moderately steep, on S to E aspect. No muskeg in the unit. Risk of mass movement is generally moderate. Western hemlock forest type. Upper slopes dominated by mountain hemlock, giving way to western hemlock below 1600 ft. elevation; minor stocking of Sitka spruce throughout. The dominant canopy is generally in excess of 300 years old, with a functionally even-aged structure. Most of the stand is Volume Class 6, highly-productive, but there is appreciable area of lower sites, primarily the upslope mountain hemlock area, where the timber is highly defective. Little evidence of recent windthrow; moderate risk of windthrow following harvest. Understory vegetation is moderately stocked with Vaccinium, with patches of devils club, skunk cabbage, and shield fern.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter logging is more economical than cable logging because road construction is not required. Pulp logs are not economical to yard with helicopter.

Visual Resource Management: Area is in the background view of small boat route. VQO of Modification.

Soils / Geology: No special constraints.

Fisheries / Watershed: No special constraints.

Wildlife: No special concerns noted. Opportunity for reserving live trees and snags for habitat structural diversity. Shelterwood with reserves was adopted for this unit.

Cultural / Recreation / Subsistence: No special concerns were noted.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Convert this overmature stand to a vigorous young stand with remnant biological structures.
(2) Provide a programmed timber yield.
(3) Meet Visual Quality Objectives for the unit.
(4) Maintain fish habitats on and adjacent to unit.
(5) Maintain or improve site productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves best meets integrated resource objectives. Rationale: (1) Converts unit to more vigorous young stand. (2) A high proportion of the net volume available will be harvested. (3) Unit design, location, and silv. treatment will allow the VQO of Modification to be met. (4) Fish habitats will be maintained by buffering Class 3 stream and protecting vegetation in the buffered V-notch. (5) Site quality will be maintained or improved, due to increased soil functioning resulting from blowdown and, to some extent, soil warming. Reserve groups will provide structural diversity and ecological functions. (6) Helicopter logging will be most economically feasible, considering effects on reduced road construction. All told, the selected alternative meets the integrated resource objectives.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit boundaries were located on a rounded back of a ridge to accommodate natural landforms and timber type. In addition, the unit conforms to the shape of natural openings in the area. The top of the unit forms a transition to the more open boundaries of the muskegs located on the ridgetop. Boundaries were designed to exclude unstable soils and submerchantable timber.

Soil, Water, and Wildlife Conservation:

BMP 13.5: Protection of V-notches.
BMP 18.1: Reserve trees provide habitat diversity.

Forest Productivity Activities:

Soil mixing from windthrow of reserve trees is expected to reduce podzol development on limited areas. Exposure of mineral soil on windthrow mounds is expected to provide favorable seedbed for spruce.

MONITORING PLAN

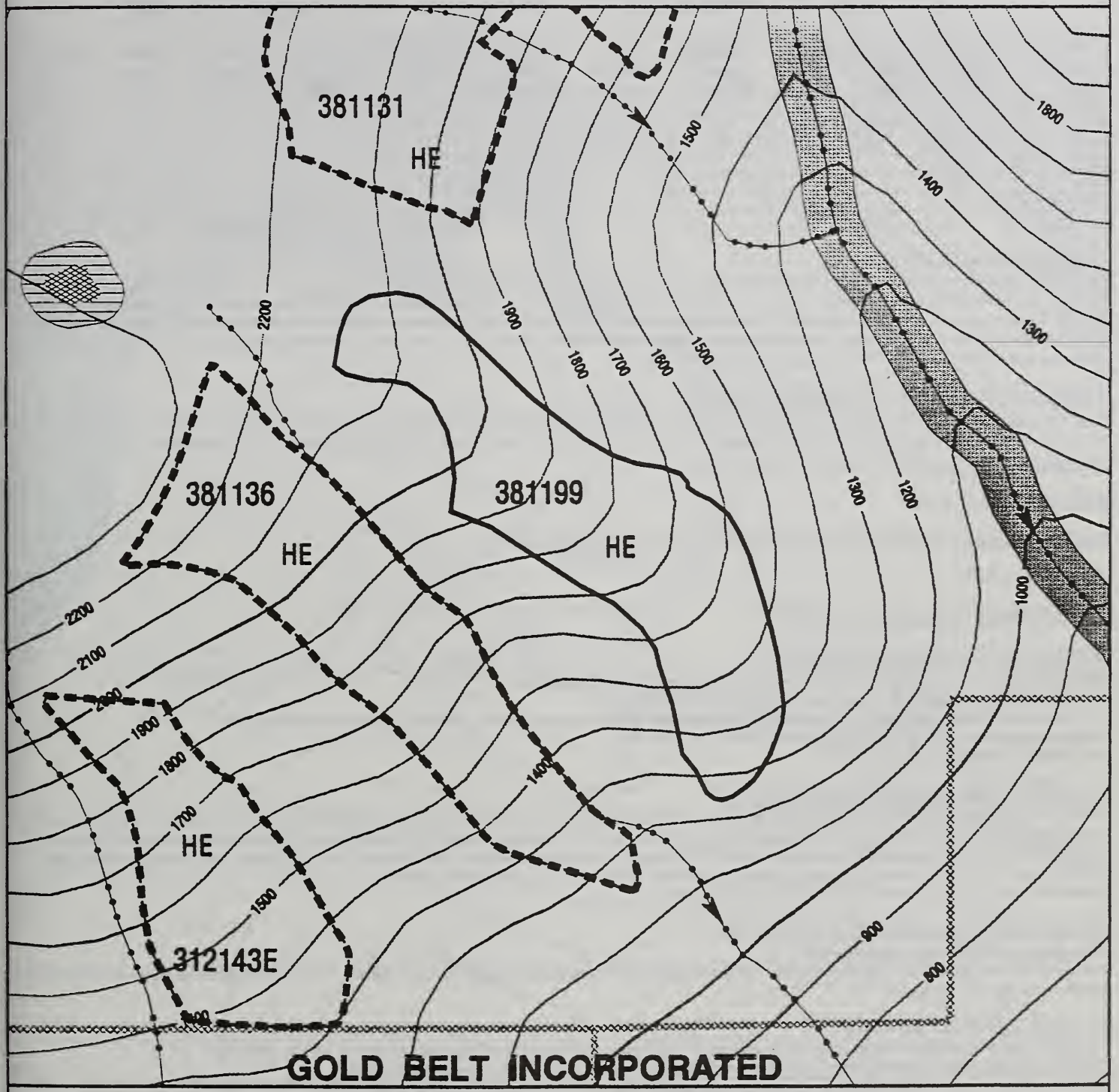
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
	*Note that PCT is probably impractical, due to high amt. of defective logs on ground w/ heli.logging.		

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 80 UNIT: 381199 ALTERNATIVE(S): D

ACRES: 30.7 TOTAL NET MBF: 755 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 784 PRINT NO.: 35



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/22/95.10:42:27.Tue

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 79 UNIT #: 398119 MAP# 24 ACRES: 35

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 55 PHOTO #'S: 684-197

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	4.0	11%	XC	130	50	L	P	L	M	L
VC-5	23.7	23.9	69%	H	130 110	60	M	M	L	M	M
VC-6	38.9	6.9	20%	H	110 130	65	M	G	L	H	H
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**34.8**	**100%**	-	-	**60**	**M**	**M**	Mistletoe	**M**	**M**

STAND CHARACTERISTICS

Two-storied and multiple storied stand in the W. hemlock series. This stand also has a minor amount Sitka spruce in the overstory. The stand is composed of large, moderate quality sawtimber with abundant amounts of utility pulp. Slopes range from 20 to 120% on aspects from NE to NW which are bisected by 2 significant V-notch creeks. Overstory ages are 300+/- years old with very high defect and significant amounts of conk, mistletoe, mechanical/animal damaged wind damage. The understory is 20-40% stocked with 20 to 50 year old W. hemlock which occur in groups throughout with poor vigor. Ground cover is moderately dense Vaccinium associated with rusty menziesia, and skunk cabbage. Site is fair to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit modified from paper plan to improve logging conditions and reduce visual impact. Sideblocking and tail trees necessary. Two main class III streams are class III V-notch and will split yard or full suspend. This unit not feasible for partial cut with conventional systems. Do not retain snags - safety.

Visual Resource Management: See prefield. Priority one on the quick list.

Soils / Geology: See prefield.

Fisheries / Watershed: One stream on lower portion is Class II with buffer. Others are Class III.

Wildlife: See prefield.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

(1) Unit located in a LUD III area where timber management is subordinate to other resources.
(2) VQO-Modification, mitigation for visuals due to proximity to Port Houghton.
(3) With consideration for items 1 and 2, regeneration of under stocked stand with diseased, mature overstory for programmed timber yield.
(4) With consideration for items 1 and 2, timber volume and value productivity.
(5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves; reserve trees that will provide ecological functions of large defective hemlock and pole size Sitka spruce of good phenotype for vertical and cavity nesting structure, seed sources for higher valued timber species, and visual softening of harvest impacts. Windthrow will result with some reserve trees which will mix the organic and mineral layers, potentially increasing or retaining site productivity. Hemlock trees selected should be green cull or high defect trees with no apparent infection of dwarf mistletoe. During final layout do not leave severely infected dwarf mistletoe trees on the edge of the unit.
Shelterwood and group selection are not feasible with logging systems

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East and west bounded by Class II and III V-notches. Northern boundary meets side ridge and buffer for Port Houghton. During final boundary layout leave healthy trees of all species on the edge of the unit.

Soil, Water, and Wildlife Conservation:

Yarding with one end suspension and or split yarding away from V-notch creeks. Directional falling away from creeks and buffers. (BMP 13.9)
BMP 13.2–Harvest design secures favorable water quality and soil productivity, minimizing soil erosion and sedimentation.
BMP 18.1: Reserve trees maintain habitat structure and provide snag recruitment.

Forest Productivity Activities:

(1) Soil mixing and warming from logging disturbance and future blowdown of reserve trees.
(2) Interplant 50 to 80 Sitka spruce per acre to brake up and slow the spread of dwarf mistletoe.
(3) During precommercial thinning favor Sitka spruce when found and remove trees infected with dwarf mistletoe.

MONITORING PLAN

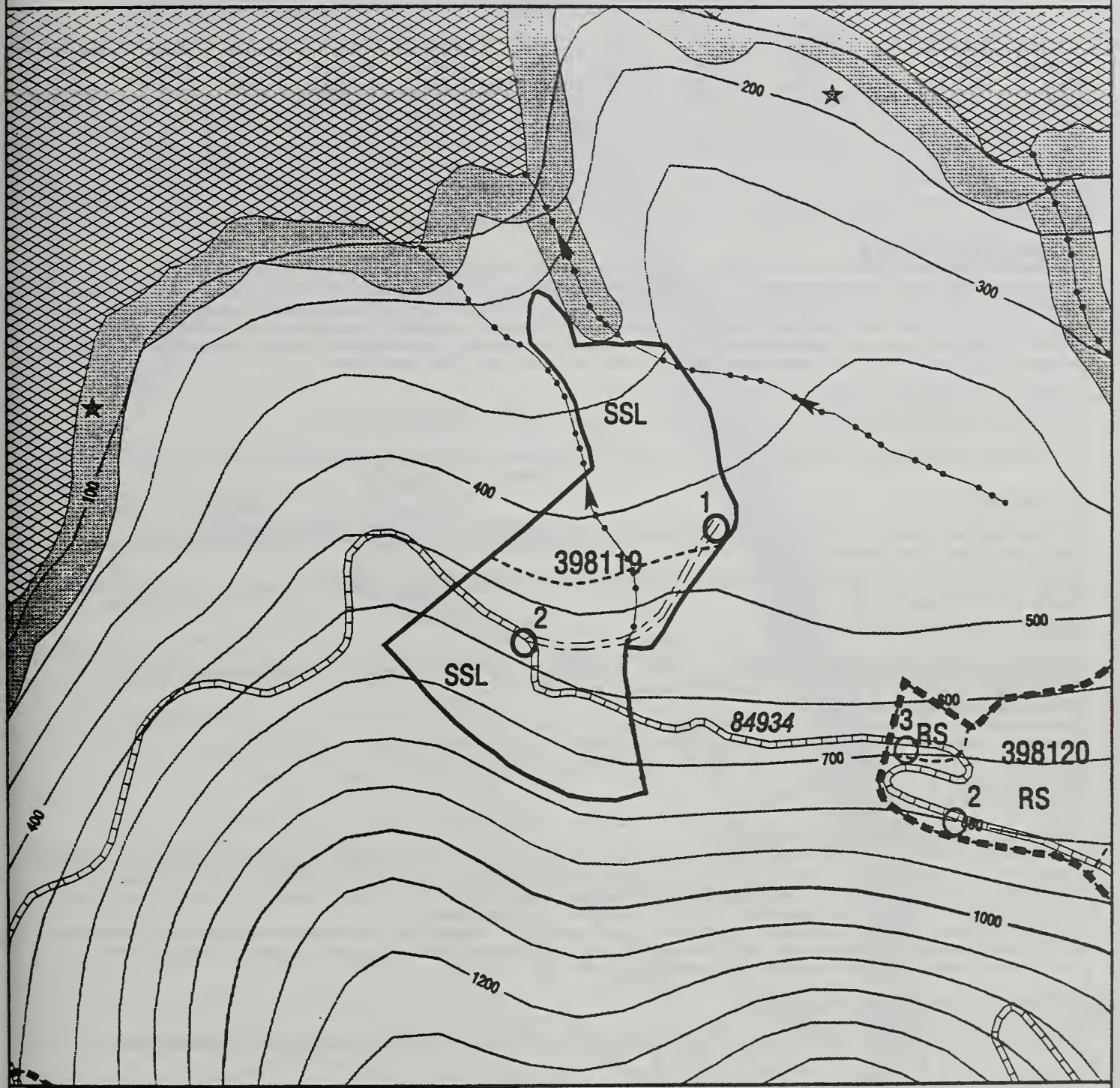
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398119 ALTERNATIVE(S): B C

ACRES: 34.77 TOTAL NET MBF: 732.5 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 55 ROLL NO.: 684 PRINT NO.: 197



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398120 MAP# 26 ACRES: 40

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 56 PHOTO #'S: 684-219

ALTERNATIVE(S): B,C,D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	1.6	5%	XC	510	55	L	MP	-	M	M
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	38.9	30.5	95%	HS	320 340	70	M	G	-	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.8	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		32.1	100%	-	-	69	M	G	-	H	M

STAND CHARACTERISTICS

Functionally even aged stand in volume class 6 with pockets of uneven aged and uneven aged in volume Class IV stands. VC 6 stands are in the Sitka spruce/W. hemlock series, while VC 4 stands are in the mixed conifer series. The unit is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 70% on aspects from NE to S which are bisected by 2 significant creeks. The eastern portion of the unit is bounded by a class II V-notch buffer. Overstory ages are 160 to 320 years old with high defect and significant amounts of conk, mechanical/animal damage, and windthrow. The understory is <20% stocked with 20+/- year old W. hemlock and Sitka spruce which occur in groups throughout with generally good vigor. Ground cover is moderate to dense Vaccinium associated with devils club, skunk cabbage and shield fern. Significant new windthrow found in pockets in western area. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: West settings are running skyline, east setting is slackline. Snag retention poses safety hazard.

Visual Resource Management: VQO Modification. Viewed in the midground from small boat route. Unit nestled in topography should meet VQO. Priority 2 on the quick list.

Soils / Geology: No concerns.

Fisheries / Watershed: Bordered by two Class II reaches along east side. No fish observed, but suitable overwinter habitat in cascade plunge pools that are 5' deep. Numerous fish barriers located downstream.

Wildlife: Suitable habitat for Canada goose, hairy woodpecker, red breasted sapsucker, brown creeper, marten and black bear. Leave live reserve trees and snags for habitat structure and snag density.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Stand improvement, Removal of a portion of the overstory for programmed timber yield.
2) Timber volume and value productivity.
3) Mitigation of background visual impact on Port Houghton small boat route.
4) Provide vertical structure and cavity nesting habitat with openings for the growth of existing and future reproduction.
5) Unit located in a LUD III area which calls for timber production to be subordinate to other resource concerns.
6) One end suspension at small creeks in unit.
7) Skyline or helicopter with suspension.

RATIONALE FOR ALTERNATIVE SELECTION

SLACKLINE/RUNNING SKYLINE harvest methods: Shelterwood with reserves is selected because: 1) Provides a high volume yield for this stand which is at its peak. 2) Reserve tree selection provides for large defective hemlock and S. spruce of good phenotype for vertical and cavity nesting habitat structure, seed sources for the higher valued timber species, and visual softening of harvest impacts. Logging systems lend themselves to this type of harvest. Clearcut would provide 10% higher yield but less regeneration of S. spruce without planting and would not mitigate the impacts to visual or wildlife habitat.

HELICOPTER harvest method: Overstory removal. Remove about 35% of the basal area from overstory trees in the salvage and acceptable categories. Retain green culls ,high defect trees, and some acceptable trees. This method is selected because it 1) provides moderate volume yields, 2) retains stand structure for habitat, 3) maintains younger trees and existing reproduction, and 4) meets VQO .

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

North boundary is logical yarding limit and low stocked area; East boundary is a Class II V-notch creek; South and west boundaryies are a logical yarding limit.

Soil, Water, and Wildlife Conservation:

Skyline yarding with one end suspension. Directional falling away from stream buffer. (BMP 13.9)
BMP 13.2: arvest design secures favorable water quality and soil productivity, minimizing soil erosion and sedimentation.
BMP 18.1: Shelterwood maintainshabitat structure and snag recruitment.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown of reserve trees.
2) Retain advanced reproduction.
3) If year 3 stocking survey indicates <50TPA of S. spruce interplant with S. spruce by year 4
4) During precommercial thinning favor S. spruce and Y. cedar when found-remove dwarf mistletoe if found.

MONITORING PLAN

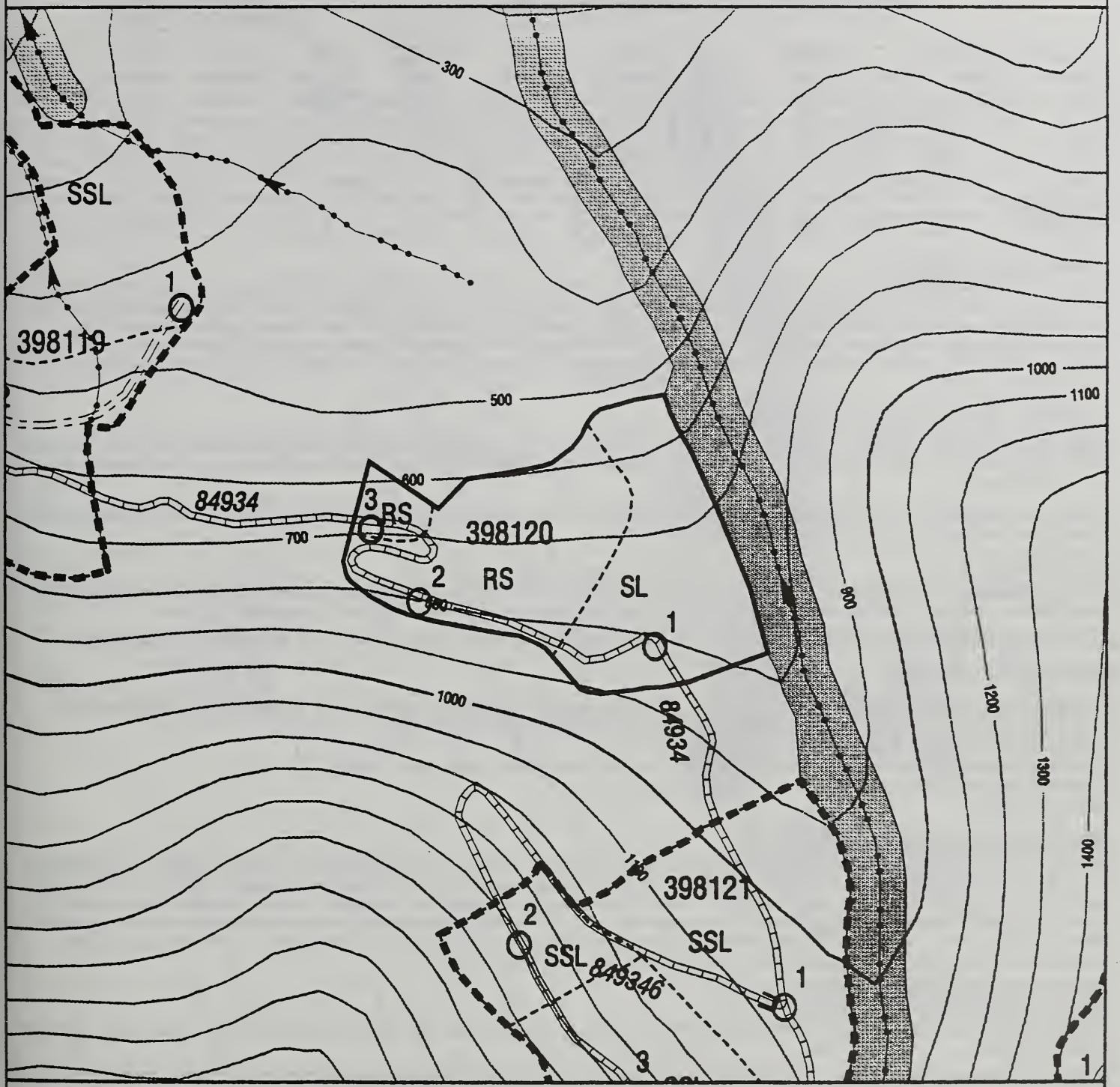
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398120 ALTERNATIVE(S): B C D

ACRES: 32.12 TOTAL NET MBF: 1006.8 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 219



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 79 | UNIT #: 398121 | MAP# 28 | ACRES: 37

AERIAL PHOTO YEAR: 1987 | FLIGHT LINE: 56 | PHOTO #'S: 684-219 | ALTERNATIVE(S): B,C,D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	5.9	10%	XC	510	55	L	MP	-	M	M
VC-5	23.7	25.4	45%	XC H	110 130	60	M	M	-	M	L
VC-6	38.9	25.6	45%	H HS	320 120	65	M	G	-	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		57	100%	-	-	62	M	M		M	M

STAND CHARACTERISTICS

Mosaic of even aged functional and two-storied stand in the W. hemlock and Sitka spruce/ W. hemlock series. This stand also has trace Y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 55% on aspects from NE to E which are bisected by several small creeks. The eastern portion of the unit is bounded by a Class II V- notch. Overstory ages are 160 to 350 years old with high defect and significant amounts of conk, mechanical/animal damage, windthrow and wind damage. The understory is <20% stocked with 20+/- year old W. hemlock and Sitka spruce which occur in groups, throughout with poor to fair vigor. Ground cover is moderately dense Vaccinium associated with and skunk cabbage. Significant new windthrow found scattered around the unit. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Small slack line. Unit altered from paper plan to create practical shape. Light retention possible with logging system. Light partial cut possible with helicopter. Snag retention is a safety concern. Skyline will be hung through buffer and across main haul route; 37 stations of temporary road including 3 stations of full bench. Tailtrees required.

Visual Resource Management: VQO: Modification. Viewed from the middle ground from small boat route. Tucked into topography, oblique to view w/ irregular boundaries, all of which minimize visual impacts. Should meet VQO. Priority 2 on quick list.

Soils / Geology: No concerns.

Fisheries / Watershed: Unit is bordered by a fishless Class II stream on the east side. Although fishless, this reach offers exceptional resident overwintering and juvenile rearing habitat at the southern 1/2 of the reach. Overall channel stability is high, with the northern end showing some signs of sedimentation problems.

Wildlife: Suitable habitat for red breasted sapsucker, marten and black bear. Recommend leaving live reserve trees to maintain stand structure and snag density.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Unit is located in a LUD III area which calls for timber production to be subordinate to other resource concerns.
2) Mitigation for visual impact on small boat route in Port Houghton.
3) Provide vertical structure and cavity nesting habitat within regeneration or managed areas when logging systems feasible.
4) Moderate timber volume and value productivity.
5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Slackline or Helicopter logging systems: Shelterwood with reserves was selected because: 1) Provides a moderately high yield from a defective stand with high potential and low current net productivity; 2) Reserve tree selection provides large defective hemlock and a proportional amount of Sitka spruce of good phenotype for vertical and cavity nesting habitat structure, seed source for S. spruce, and visual softening of harvest impacts. Logging systems conventional or helicopter are suited for the prescribed partial harvest. Clear cut would provide 10%+ more volume yield but less regeneration of S. spruce without planting and would not contribute to the retention of stand structure for habitat and visual mitigation. The unit has some characteristics that might lend themselves to overstory removal in a helicopter yarding scenario; however, most of the understory and remaining overstory would not have the crown characteristics needed for this type of harvest.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded to the east by a Class II buffer to the west the boundary runs along the 1600 foot elevation mark and to the north is bounded by a reserve setting between the unit and unit 398120.

Soil, Water, and Wildlife Conservation:

BMP Yarding operations : one end suspension. Directional fall away from stream buffer. Close spur roads, waterbar and seed as needed. (BMP 13.9)
BMP 13.3–Harvest design secures favorable water quality and soil productivity, minimizing soil erosion and sedimentation, TTRA buffers on Class II stream. BMP 12.6: Unit boundary maintained at least 100' from class II stream.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown of reserve trees.
2) Scheduled precommercial thinning- during thinning favor S. spruce when found.

MONITORING PLAN

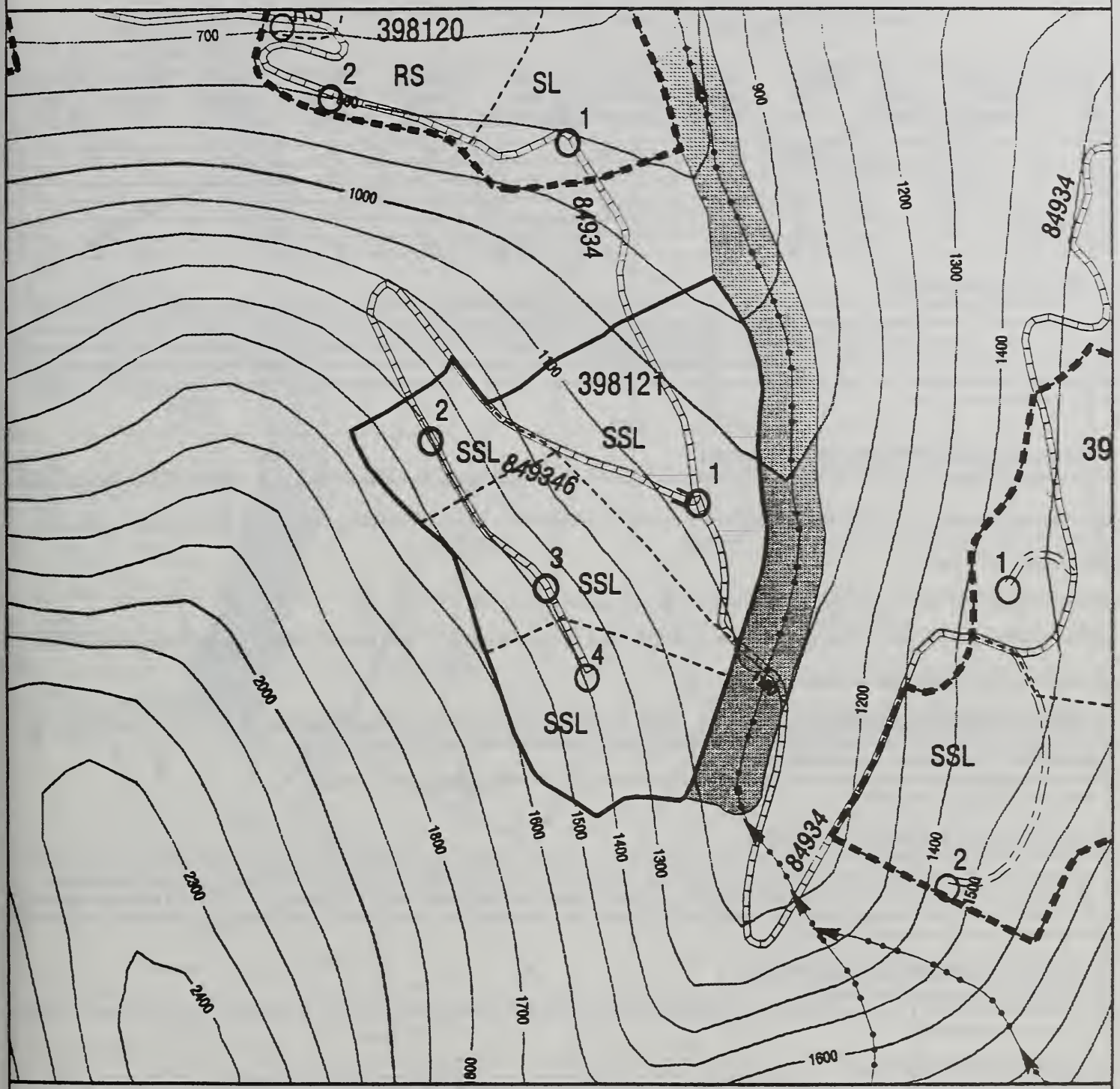
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398121 ALTERNATIVE(S): B C D

ACRES: 56.82 TOTAL NET MBF: 1377.6 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 219



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.20:00:35.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398122 MAP# 31 ACRES: 60

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 56 PHOTO #'S: 684-218

ALTERNATIVE(S): B,C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	12.5	22%	H	130 140	64	M	M	-	H	H
VC-6	38.9	38.0	67%	H	130 140	65	M	M	-	H	H
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	6.5	11%	XC-MH	410 420	35	L	P	-	M	M
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		57.0	100%	-	-	57	M	M		H	H

STAND CHARACTERISTICS

Two-storied/unevenaged stand in the W. hemlock series and patches of low site that are mixed conifer series. This stand also has significant amounts of Sitka spruce and Y. cedar in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 80% on aspects from NW to W which are bisected by several small creeks. The western portion of the unit has two inclusions low site/muskeg. Overstory ages are 300=/- years old with ate, high defect and significant amounts of conk, mechanical/animal damage, defoliators, and minor windthrow. The understory is 20-40% stocked with 20 to 80 year old W. hemlock and Sitka spruce which occur in groups throughout with fair vigor. Ground cover is sparse to moderately dense Vaccinium associated with devils club. Site is poor to good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline with 70 foot tower. Not operationally suited for partial cut. Snag retention creates a safety hazard. Tailtrees required. Haul across haul route.

Visual Resource Management: VQO: Modification. Unit partially not seen. Portions seen from mid ground on small boat route. Tucked into topography. Scalloped top emulates natural openings on slope. Should meet VQO. Priority 2.

Soils / Geology: No concerns.

Fisheries / Watershed: Stream buffer marked at SW corner of unit. no other streams in or near unit.

Wildlife: Suitable habitat for hairy woodpecker, brown creeper, marten, black bear. Recommend retention of green trees and snags for habitat structure and snag density.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Unit is located in a LUD III area which calls for timber production activities to be subordinate to other resource concerns.
2) Mitigation for visual impact on small boat route in Port Houghton.
3) Provide vertical structure and cavity nesting habitat within regeneration or managed areas when logging system are feasible.
4) Timber volume and value productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected for the entire unit because: 1) Provides a high yield from a defective stand with generally high potential and low current net productivity; 2) reserve tree selection provides large defective hemlock and a proportional amount of S. spruce and Y. cedar of good phenotype for vertical and cavity nesting habitat structure, seed source for S. spruce and Y. cedar and softening of visual impacts. Clearcut would provide more volume but not meet VQO, wildlife, or ecological objectives as well. Shelterwood with reserves and group selection would provide substantially less volume, and are not needed to meet other resource objectives. Deferring treatment at this time would not provide a programmed harvest.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded to the north by a reserve setting adjacent to Unit 398123, to the east by excessively steep slopes, to the south by a Class III V- notch, to the west by a slope break to excessively steep slopes.

Soil, Water, and Wildlife Conservation:

BMP 13.15--Reserve low site, muskeg and wet areas in unit. Close spur roads seed and waterbar as needed.
BMP 18.1--Reserve cavity nesting habitat and vertical structure.
BMP 12.6: Unit boundary maintained at least 100' from Class II stream.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown.
2) Scheduled precommercial thinning- during thinning favor S. spruce and Y. cedar when found

MONITORING PLAN

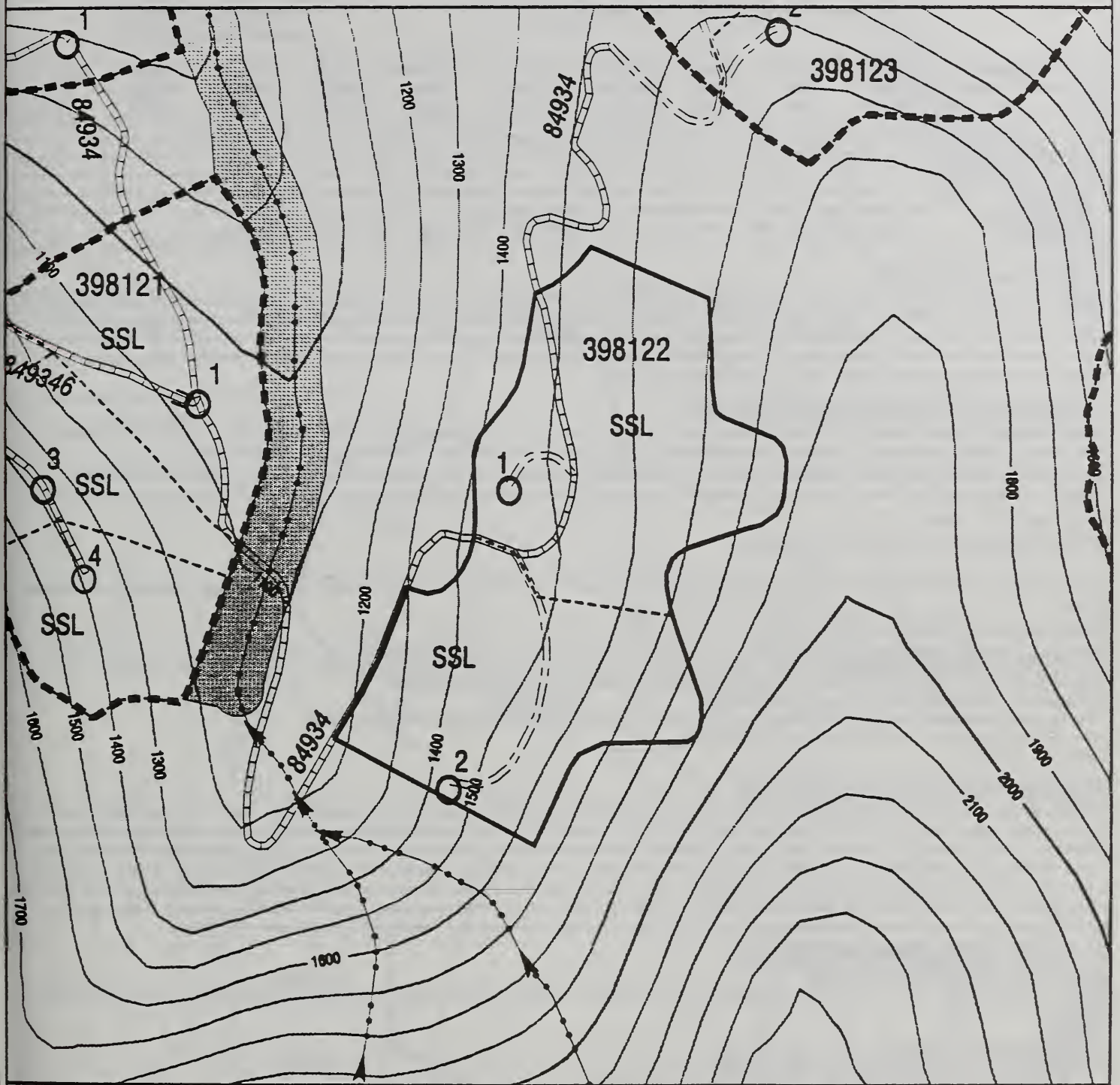
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398122 ALTERNATIVE(S): B C

ACRES: 57.03 TOTAL NET MBF: 1489.1 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 219



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398123 MAP# 25 ACRES: 43

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 56 PHOTO #'S: 684-219

ALTERNATIVE(S): B,C,D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	61.6	100%	H	110 130	65	M	M	L	H	M
VC-6	38.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		61.6	100%	-	-	65	M	M	Mistletoe	H	M

STAND CHARACTERISTICS

Multiple storied stand in the W. hemlock series. This stand also has Sitka spruce in the overstory. The stand is composed of small to large, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 20 to 70% on aspects from W to NE with some steep pitches up to 100%. The unit is on the face of a ridge. Overstory ages are 300+/- years old with high defect and significant amounts of conk, mistletoe, and mechanical/animal damage. The understory is 20-40% stocked with 20 to 50 year-old W. hemlock and Sitka spruce which occur in groups throughout with poor vigor. Ground cover is moderate vaccinium associated with skunk cabbage. Significant new windthrow found scattered. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline 90 foot tower. Suitable for light retention in some areas. Boundaries modified to logical yarding limits. Snag retention creates a safety hazard. Side blocking required. Tail holds (Skyline extensions) required outside of unit. Tailtrees required. 10 stations temporary road.

Visual Resource Management: VQO: Modification. Viewed from the middle ground small boat route. Steep slopes create "billboard" condition which accentuates impacts. Noticeable because on nose of ridge. Consider group sel., retaining green culls and snags, reducing size of unit or other harvest methods to limit impact. Priority 1

Soils / Geology: No concern.

Fisheries / Watershed: No streams near unit- no concern.

Wildlife: Suitable habitat (1/2 of unit) red breasted sapsucker, marten and black bear. Recommend leaving green trees and snags to maintain habitat structure and snag density.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Unit is located in a LUD III area which calls for timber production to be subordinate to other resource concerns.
2) Mitigation for visual impact on Port Houghton small boat route.
3 Provide vertical structure and nesting cavity habitat within regeneration or managed areas when feasible with logging system.
4) Provide moderate output of timber volume and value productivity.
5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

SKYLINE harvest system: Shelterwood with reserves was selected because: 1) Provides high yield from a defective stand with high potential and low current productivity; 2) Reserve tree selection provides large defective hemlock and a proportional amount of S. spruce of good phenotype for vertical and cavity nesting habitat structure, seed source for S. spruce and softening of visual impacts. Using the slackline harvest system this is the optimum amount of retention possible. **HELICOPTER** harvest system: Group selection was selected because: 1) Provides a moderate yield from a defective stand with a high potential and low current productivity; 2) Group selection provides retention of portions of the unit with removal entries every 25 years. One to two acre openings are naturally regenerated between entries and retained portions of the stand provide vertical habitat structure and hide management activities from view. During the various entries some groups should be selected for retention, these areas should provide long term vertical structure and nesting cavities. Leave S. spruce on the edges of openings when available and remove trees with mistletoe.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit is located on the "nose" of a ridge facing Port Houghton. Unit boundaries are flagged for logical conventional logging on two settings, and to avoid excessively steep and unstable slopes.

Soil, Water, and Wildlife Conservation:

BMP 12.17--Close spur roads, waterbar and seed as needed.
BMP 13.9--Suspend log yarding
BMP 18.1--Maintain habitat diversity for wildlife.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown.
2) Scheduled precommercial thinning- during thinning favor S. spruce when found, remove mistletoe infection when found.
The above activities are for the Shelterwood with reserves harvest method only

MONITORING PLAN

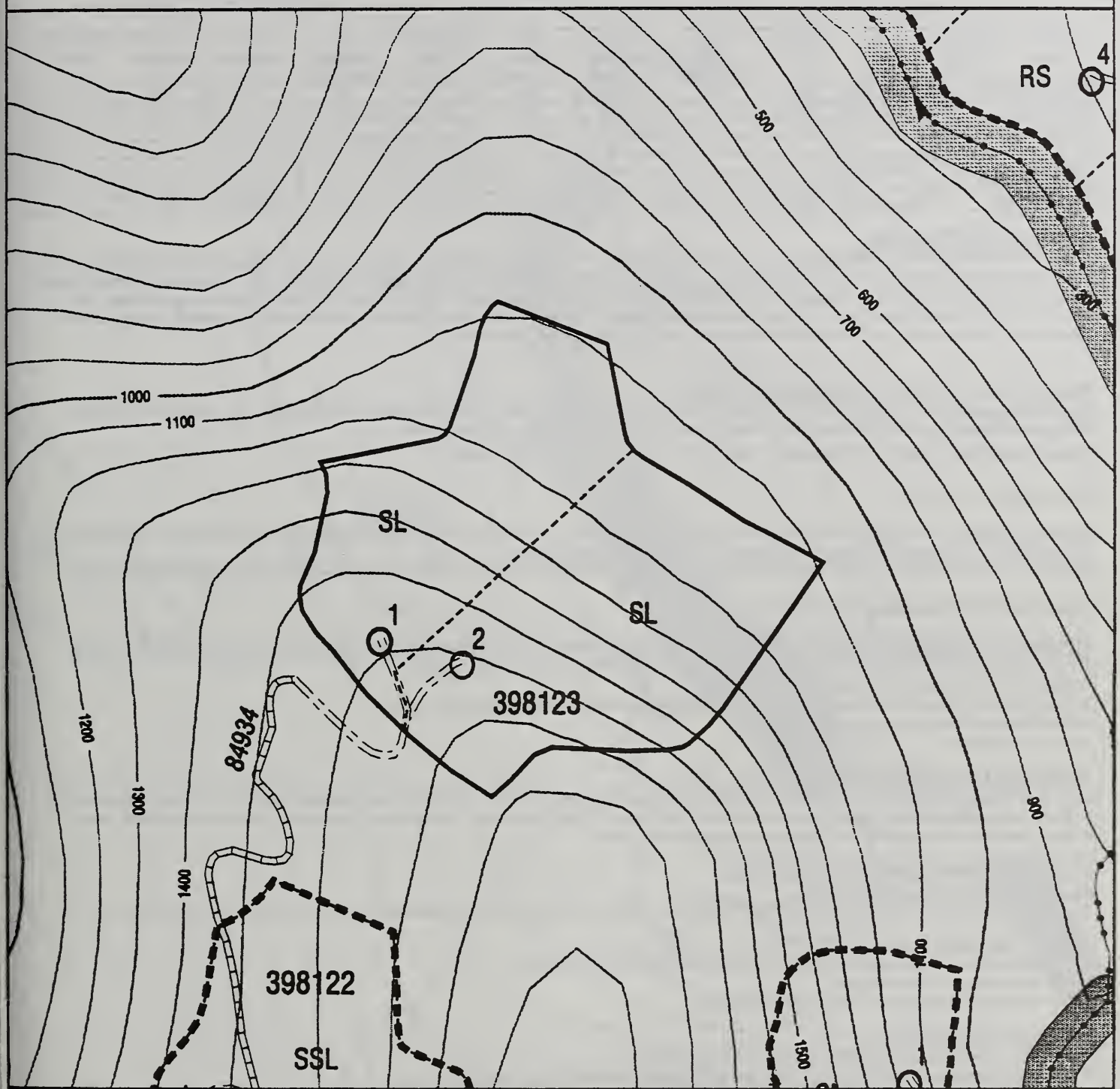
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398123 ALTERNATIVE(S): B C D

ACRES: 61.59 TOTAL NET MBF: 1222.3 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 220



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398124 MAP# 32 ACRES: 69

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 56 PHOTO #'S: 684-218

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	15.1	12.9	21%	XC	510	55	L	MP	-	M	M
VC-5	23.7	38.1	63%	XC H	110 130	60	M	M	-	M	L
VC-6	38.9	9.4	16%	H	110 130	60	M	G	M	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		60.4	100%	-	-	59	M	M	Mistletoe	M	L

STAND CHARACTERISTICS

Multiple storied stand in the W. hemlock series. This stand also has Sitka spruce in the overstory. The stand is composed of medium to large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 90% on aspects from NE to S which are bisected by 3 significant V-notch creeks. The eastern portion of the unit is bounded by a ridgetop/muskeg. Overstory ages are 150 to 400 years old with high defect and significant amounts of conk, mistletoe, mechanical/animal damage. The understory is 20-40% stocked with 20 to 40 year-old W. hemlock which occur in groups throughout with poor to fair vigor. Ground cover, is moderately dense Vaccinium associated with rusty menziesia, devils club, and skunk cabbage. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Skyline 90' tower. Not suitable for partial cut due to sidehill yarding. Excessively steep areas excluded from unit. Temp spur roads in unit, with some end-haul construction. Guylines in stream buffer required. Tailholds external to unit; tailholds required.

Visual Resource Management: VQO: Modification. Most of unit not seen. Should meet VQO. Priority 2

Soils / Geology: No concerns.

Fisheries / Watershed: A large Class II stream defines the boundary along the east portion of the unit. This stream was buffered to the toe of the slope to protect the low muskeg adjacent to fish habitat. Split yarding recommended to protect V-notch Class III streams.

Wildlife: Suitable habitat for red breasted sapsucker, marten, and black bear. Recommend leaving live reserve trees and snags for habitat structure and snag density.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Unit is located in a LUD III area which calls for timber production to be subordinate to other resource concerns.
2) Mitigation for visual impact on Port Houghton small boat route.
3) Provide vertical structure and nesting cavity habitat within regeneration areas when feasible within logging system.
4) Provide output of timber volume and value productivity.
5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcut with reserves was selected for the entire unit because: 1) Provides a high yield from a defective stand with generally high potential and low current net productivity; 2) reserve tree selection provides large defective hemlock and a proportional amount of S. spruce and Y. cedar of good phenotype for vertical and cavity nesting habitat structure, seed source for S. spruce and Y. cedar and softening of visual impacts.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit is bounded to the east by a Class II stream buffer, the balance of the unit is bounded to facilitate a logical Skyline harvest unit and avoid sensitive soils areas.

Soil, Water, and Wildlife Conservation:

BMP 13.5--Directional fall trees away from buffers. Close spur roads and waterbar as needed.
BMP 13.15--Muskeg and stream buffered.
BMP 18.1--Retention of trees for recruitment and habitat diversity.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown.
2) Scheduled precommercial thinning favor S. spruce when found, remove mistletoe infection when found.

MONITORING PLAN

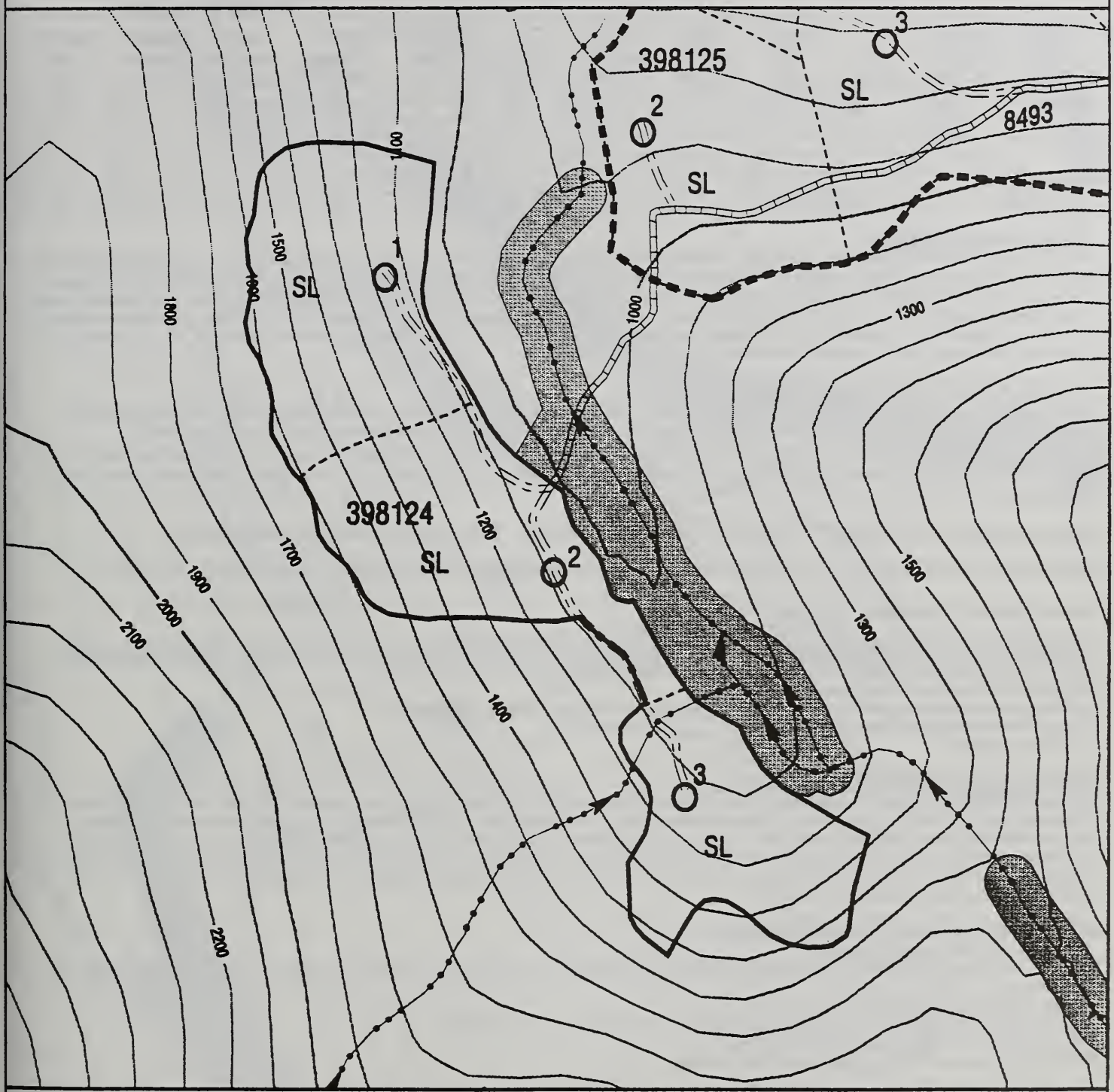
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398124 ALTERNATIVE(S): C

ACRES: 60.37 TOTAL NET MBF: 1181.8 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 57 ROLL NO.: 1184 PRINT NO.: 147



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398125 MAP# 27 ACRES: 91

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 57 PHOTO #'S: 1184-146

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	15.1	21.5	24%	HS	420	50	M	P	-	M	M
VC-5	23.7	69.0	76%	H	130	55	H	MP	-	H	H
VC-6	38.9	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		90.5	100%	-	-	54	H	MP	-	H	H

STAND CHARACTERISTICS

Mosaic stands in the W. hemlock and Sitka spruce series. This stand also has Mt. hemlock in the overstory. The stand is composed of large, moderate quality sawtimber with minor amounts of utility pulp. Slopes range from 0 to 70%, with steep pitches up to 100% on aspects from NE to NW. Several rock bluffs in the southern portion of the unit. The western and northern portion of the unit is bounded by Class II & III V-notch creeks. Overstory ages are 250 to 350+/- years old with high defect and significant amounts of conk, mechanical/animal damage, wind damage and minor fluting. The understory is <20% stocked with 20 to 50 year old W. hemlock which occur in groups throughout with poor vigor. Ground cover is moderate vaccinium associated with devils club and skunk cabbage. Historic windthrow events were catastrophic, little recent windthrow. Upper slopes deleted from the unit to avoid slope instability. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: 90' tower/slackline. Not suitable for partial harvest. Snag retention is a safety issue. Substantial sidehill yarding. Unit was reconfigured to mitigate visual impacts, fisheries and for logging feasibility. Tailtrees and side blocking required. 14 stations temporary road, including 2 stations full bench.

Visual Resource Management: VQO: modification. Lower 1/2 of unit not seen. Upper 1/2 viewed from the middle ground, small boat route. Steep slopes create a "billboard" condition in which impacts are accentuated. Cum. impacts with adjacent units result in max mod. Consider group sel., retention or unit reconfiguration. Priority 1.

Soils / Geology: No concerns.

Fisheries / Watershed: Unit was reconfigured to avoid streams on north and west boundaries. Originally unmapped Class II stream was buffered-100'

Wildlife: Suitable habitat for red breasted sapsucker, martin and black bear. Recommend leaving green trees and snags for habitat structure and snag density.

Cultural / Recreation / Subsistence: No concerns

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Unit is in a LUD III area which calls for timber production to be subordinate to other resource concerns.
2) Mitigation for visual impacts on Port Houghton small bout route.
3) Provide vertical structure and nesting cavity habitat within regeneration areas when feasible with logging system.
4) Provide output of timber volume and value productivity.
5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Shelterwood with reserves is the selected alternative. It best meets resource objectives because: 1) It provides moderate yield from a defective stand with high potential and low current productivity. This is achieved partially by using cull trees for reserves, thus allowing more of the useable volume to be logged. 2) Well distributed reserve tree selection provides large defective hemlock and a proportional amount of S. spruce of good phenotype for vertical and cavity habitat structure, a source of blowdown for ecological functioning, seed source for regeneration of the new stand, and softening of visual impact. Clearcut and clearcut with reserves would provide less visual quality, less stand structure complexity, but more harvestable volume. Other more selective harvests would not leave enough suitable crop trees after harvest. Defer would not provide a timber yield and regenerate a high defect unit.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded to the west and north by Class II buffers and Class III V- notch streams. The south and east are bounded by logical harvest system limits and excessively steep terrain.

Soil, Water, and Wildlife Conservation:

BMP 13.16--Directional falling away from stream buffers. Close spur roads, waterbar and seed as needed.
BMP 12.6--Unit boundary maintained 100' from Class II stream.
BMP 18.1--Reserve trees provide cavity nesting and habitat diversity.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown.
2) Scheduled precommercial thinning favor S. spruce when found, remove mistletoe infection when found.

MONITORING PLAN

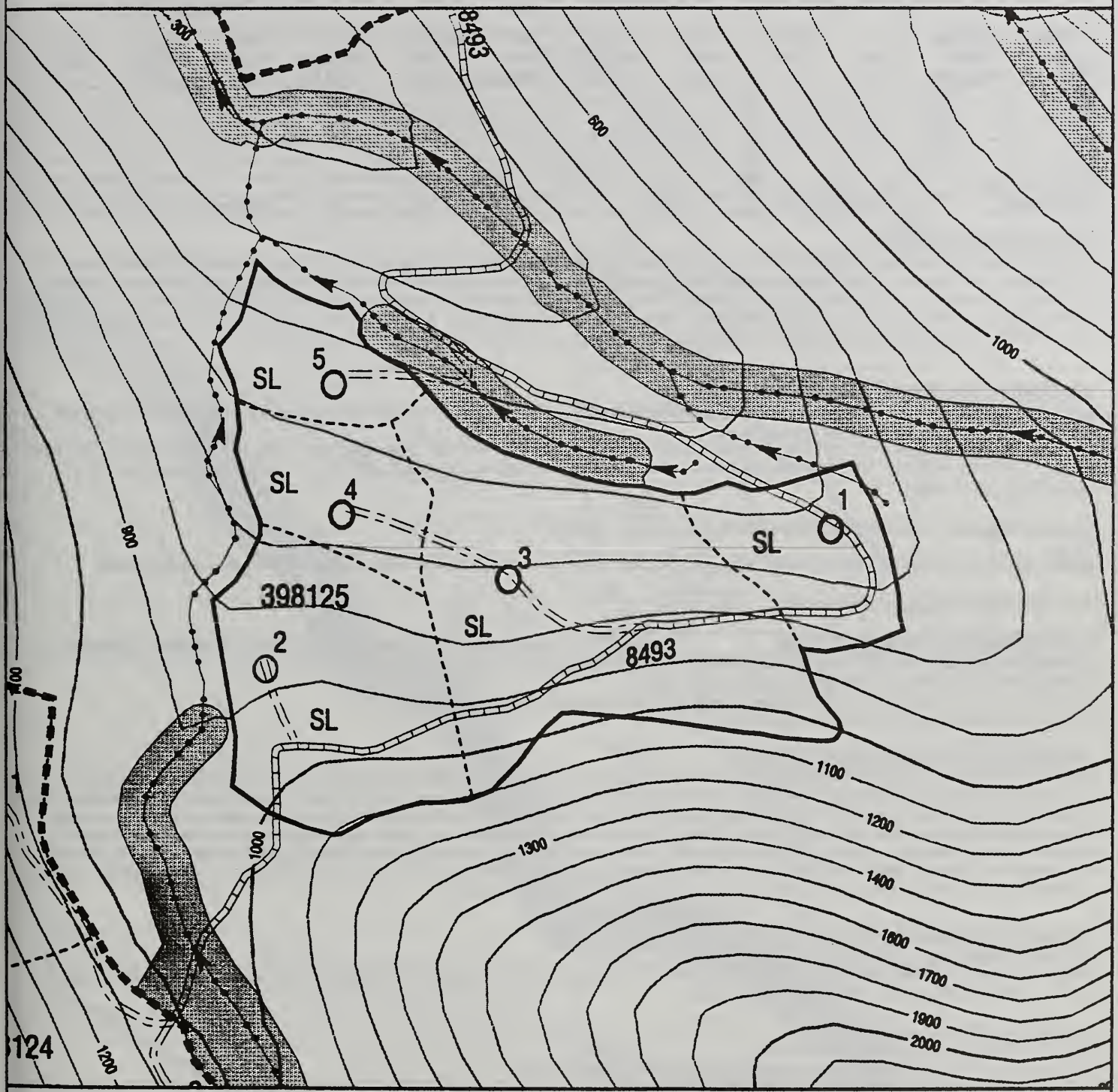
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398125 ALTERNATIVE(S): C

ACRES: 90.49 TOTAL NET MBF: 1578.9 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 57 ROLL NO.: 1184 PRINT NO.: 146



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398126 MAP# 21 ACRES: 88

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 57 PHOTO #'S: 1184-146

ALTERNATIVE(S): C,D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	38.9	87.6	100%	H	110 115	60	M	G	L	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		87.6	100%	-	-	60	M	G	Mistletoe	H	M

STAND CHARACTERISTICS

Two-storied/ uneven-age stand in the W. hemlock series. This stand also has a minor amount Sitka spruce in the overstory. The stand is composed of medium to large, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 70% on aspects from NW to SW which contain some bluffs that are in excess of 70% slope. The western portion of the unit is bounded by a Class II V-notch. Overstory ages are 300+/- years old with high defect and significant amounts of conk, mistletoe, mechanical/animal damage, wind/ice damage. The understory is 20-40% stocked with 20 to 100 year old W. hemlock which occur in groups throughout with good vigor. Ground cover is moderate to dense Vaccinium associated with rusty menziesia, skunk cabbage. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Unit altered. Running skyline and small slack line. Not suitable for partial cut. Snag retention is a safety issue. Skyline extensions required outside of unit through buffer. 33 stations of temporary spurs.

Visual Resource Management: VQO: Modification. Viewed from the middle ground from small boat route. Steep slopes create a" billboard" condition which could result in maximum modification. exceeding VQO. Ridge area very visible. Consider group selection, retaining green culls & snags, and or reduce unit and trim corners. Priority 1

Soils / Geology: No concerns.

Fisheries / Watershed: Class II stream on western edge of unit was buffered - 100'

Wildlife: Suitable habitat for red breasted sap sucker, martin, and black bear. Recommend leaving reserve trees and snags for habitat structure and snag density.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities)

1) Unit is located in a LUD III area which calls for timber production to be subordinate to other resource concerns.
2) Mitigation for visual impacts on Port Houghton small boat route.
3) Provide vertical and nesting cavity habitat structure within regeneration areas when feasible with logging system.
4) Provide moderate output of timber and value productivity.

RATIONALE FOR ALTERNATIVE SELECTION

SKYLINE harvest system: Clearcut with reserves because; 1) Provides high yields from defective stands with high potential and low current productivity; 2) Pockets of reserve trees and feathered edges between upper settings will provide vertical and cavity habitat structure, seed source and soften the visual impacts on Port Houghton This is the optimum amount of retention with this harvest system. **HELICOPTER** harvest system: Group selection because;1) Provides a moderate yield by turning over about 25% of the unit with entries every 25 years until the stand is completely harvested except for reserve islands. 2) Group selection provides retention of portions of the unit, while one to two acre openings are created and naturally regenerated. During subsequent entries additional groups will be removed except for selected reserve groups that will be retained for vertical and cavity habitat structure. Because the harvest operation occurs in small groups over a long period of time the management activities are almost completely hidden from view. Total clearcut would not be as suitable for this area due to visual concerns.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit is bounded by a Class II buffer to the southwest and by logical skyline settings boundaries on the balance of the unit. The unit was reduced in size from the paper plan ,this partially mitigates the visual impacts on the upper slopes.

Soil, Water, and Wildlife Conservation:

BMP 13.3--TTRA 100' buffer placed on Class II stream.
BMP 13.2--Harvest design ensures favorable water quality, soil productivity, and minimal erosion.
BMP 18.1--Habitat diversity maintained with group selection or reserve trees.
BMP 13.9--Directional falling away from buffer.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown.
2) Scheduled precommercial thinning- during thinning favor S. spruce when found, remove dwarf mistletoe when found.
3) Interplant Sitka spruce in areas of heavy dwarf mistletoe to retard the spread of the disease.
The above activities are for the Clearcut with reserves only.

MONITORING PLAN

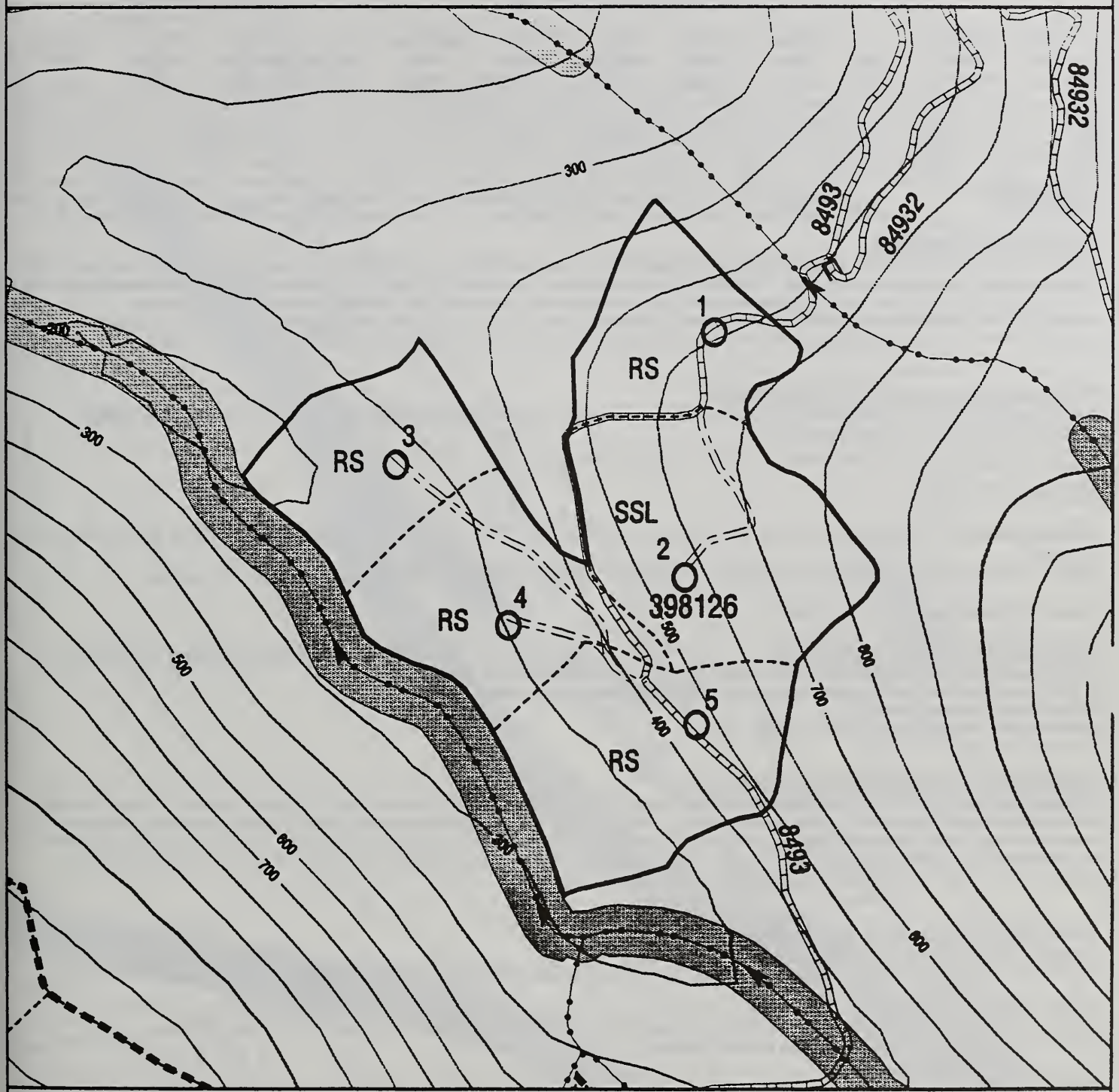
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398126 ALTERNATIVE(S): C D

ACRES: 87.61 TOTAL NET MBF: 2798.7 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 56 ROLL NO.: 684 PRINT NO.: 220



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

08/21/95.19:49:32.Mon

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398128 MAP# 23 ACRES: 34

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 57 PHOTO #'S: 1184-146

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	15.1	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	38.9	33.8	100%	H	130 120	62	H	G	L	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		33.8	100%	-	-	62	H	G	Mistletoe	H	M

STAND CHARACTERISTICS

Mosaic of two-storied and multiple storied stand in the W. hemlock series. This stand also has significant amounts of Sitka spruce and a trace of Y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 60% on aspects from SW to W. The western portion of the unit is bounded by a Class II V-notch stream. Overstory ages are 250 to 300+ years old with moderate defect and significant amounts of conk, light mistletoe mechanical/animal damage, and scattered windthrow. The understory is 40-60% stocked with 20 to 75 year old W. hemlock and Sitka spruce which occur in groups throughout with fair to good vigor. Ground cover is sparse to dense Vaccinium associated with shield fern and skunk cabbage. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: All settings running skyline/ sidehill yarding. Rocky terrain will require care during falling to avoid breakage. Guylines in buffer. Tailtrees required. Extensions beyond unit boundary required.

Visual Resource Management: VQO Modification. Unit tucked into topography should meet VQO.

Soils / Geology: No concerns.

Fisheries / Watershed: Originally unmapped creek in near West portion of the unit is Class II. The unit was modified to exclude the stream and buffer. No fish seen at lake SE of unit.

Wildlife: Suitable habitat for hairy woodpecker, creeper, marten and black bear. Recommend leaving green trees and snags to maintain habitat structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Unit is located in a LUD III area where timber production must coexist or be subordinate with other resource concerns.
2) Provide vertical and cavity nesting habitat structure within managed stands where logging system are feasible.
3) Timber volume and value productivity.
4) Maintain water and habitat quality in adjacent streams.
5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting with reserves: The objective of clearcutting with reserves is to retain trees that are likely to provide the ecological functions of windthrow by mixing the organic and mineral layers, potentially retaining or increasing site productivity. Trees that are not windthrown will provide long-term structural diversity and enhance wildlife habitat. Select reserve trees that will best meet the following criteria: Apparent cull or high defect-conk, broken or multiple top, trees with bole cavities. Provide a mixture of wind firm and windthrow susceptible trees. Include a proportion of Sitka spruce. Reserve snags along the upper edge of the unit, if safe for woods crews. Same prescription if helicopter harvest is used, however this logging system will offer more flexibility on retention.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bounded on the south by a Class II stream buffer and muskeg area and to the north by logical setting boundaries for recommended conventional logging system.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Streams of concern have been deleted from the unit. Roads have been relocated and would not be constructed in the Helicopter alternative.
BMP 18.1: Reserve trees maintain habitat structure and snag recruitment.

Forest Productivity Activities:

During precommercial thinning favor Sitka spruce. Weed out trees infected with dwarf mistletoe. Interplant S. spruce.

MONITORING PLAN

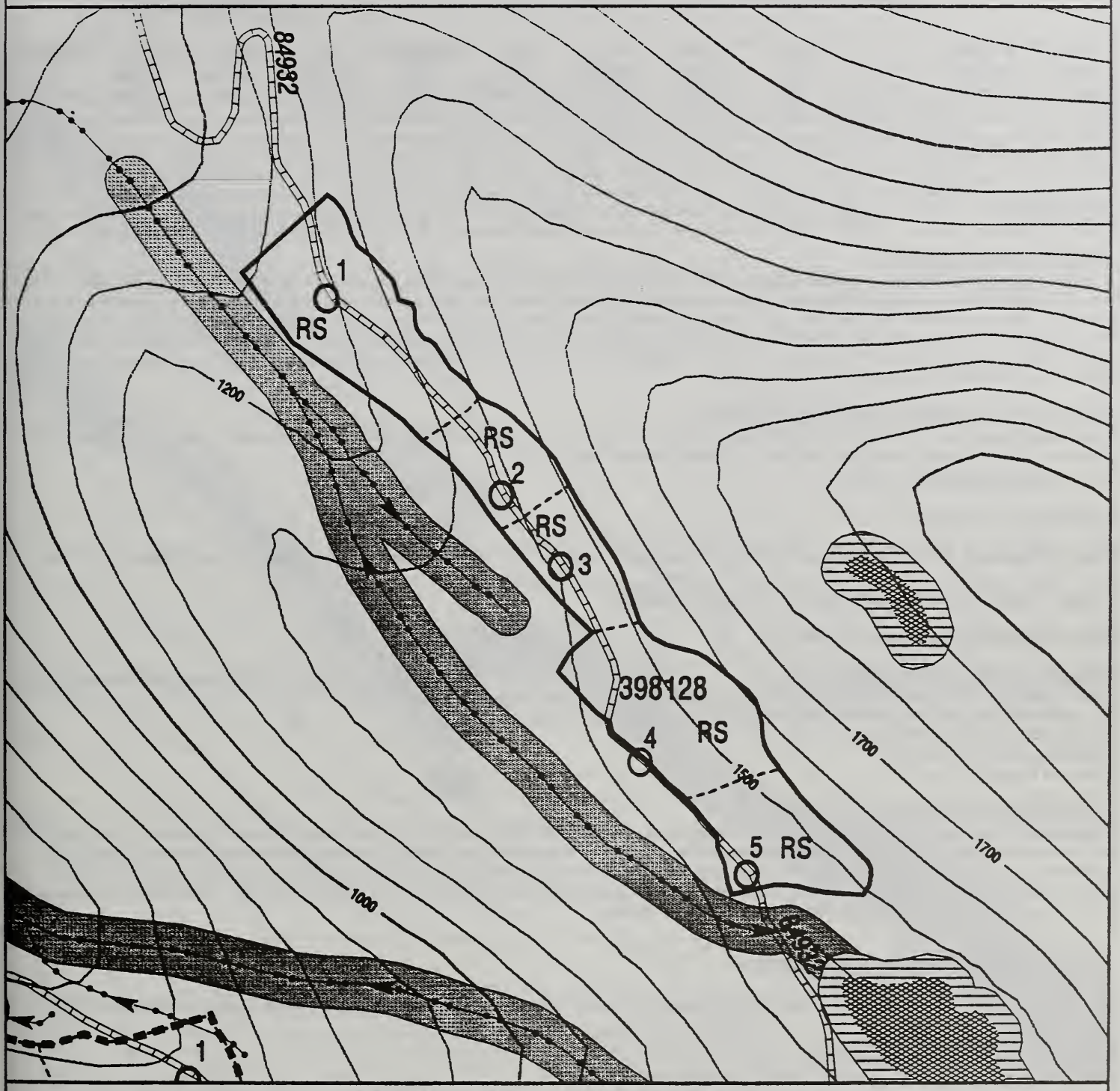
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398128 ALTERNATIVE(S): C

ACRES: 33.81 TOTAL NET MBF: 1079.9 QUAD(S): SUMB4 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 57 ROLL NO.: 1184 PRINT NO.: 146



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398129 MAP# 29 ACRES: 25

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 58 PHOTO #'S: 1184-164

ALTERNATIVE(S): C

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	3.5	14%	XC	510	55	L	MP	-	M	M
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	38.9	21.1	86%	XC-H	410-130	75	M	M	L	M	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		24.6	100%	-	-	72	M	M	Mistletoe	M	M

STAND CHARACTERISTICS

Two-storied stand in the W. hemlock and mixed conifer series. This stand also has a significant amount of Sitka spruce and a minor amount Y. cedar in the overstory. The stand is composed of medium size, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 60% on aspects from SW to W which are bisected by several small creeks, rock slides and rock outcrops. The western portion of the unit is bounded by a Class II stream and a small lake and buffer to the northwest. Overstory ages are 150 to 250 years old with high defect and significant amounts of conk, mechanical/animal damage, wind/ice damage. The understory is 20-40% stocked with 20 to 50 year old W. hemlock and Sitka spruce which occur in groups throughout with fair vigor. Ground cover is moderate to dense Vaccinium associated with scattered pockets of skunk cabbage. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: The unit layout was altered due to steep terrain and rock bluffs. Complex tailholds required. Unit not suitable for partial cut. Snag retention is a safety issue. Guyline anchors needed within fish buffer. 16 stations temporary road.

Visual Resource Management: Not seen

Soils / Geology: No concerns.

Fisheries / Watershed: Minor Class III streams in unit did not merit special consideration. 100 foot buffers flagged for Class II streams near unit. No sign of fish in lakes.

Wildlife: Suitable habitat for hairy woodpecker, creeper, marten and black bear.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Unit is located in a LUD III area where timber production must coexist or be subordinate with other resource concerns.
2) Provide vertical and cavity nesting habitat structure within managed stands where logging system are feasible.
3) Timber volume and value productivity.
4) Maintain water and habitat qualify.
5) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Clearcutting with reserves: The objective of clearcutting with reserves is to reserve trees that are likely to provide the ecological functions of windthrow by mixing the organic and mineral layers, potentially retaining or increasing site productivity. Trees that are not windthrown will provide long-term structural diversity and enhance wildlife habitat. Select reserve trees that will best meet the following criteria: Apparent cull or high defect-conk, broken or multiple top, trees with bole cavities. Mixture of wind firm and windthrow susceptible trees. Include a proportion of Sitka spruce. Reserve snags along the upper edge of the unit, if safe for woods crews. Same prescription if Helicopter harvest is used, however this logging system will offer more flexibility on retention.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Unit is bounded by lake, stream and muskeg buffers to the south and west. The northern boundary is a logical limit of the cable logging system recommended for this unit.

Soil, Water, and Wildlife Conservation:

BMP 13.15: Unit configured to exclude muskegs.
BMP 18.1: Reserve trees provide vertical structure and snag recruitment.

Forest Productivity Activities:

During precommercial thinning favor Sitka spruce. Weed out trees infected with dwarf mistletoe. Interplant S. spruce.

MONITORING PLAN

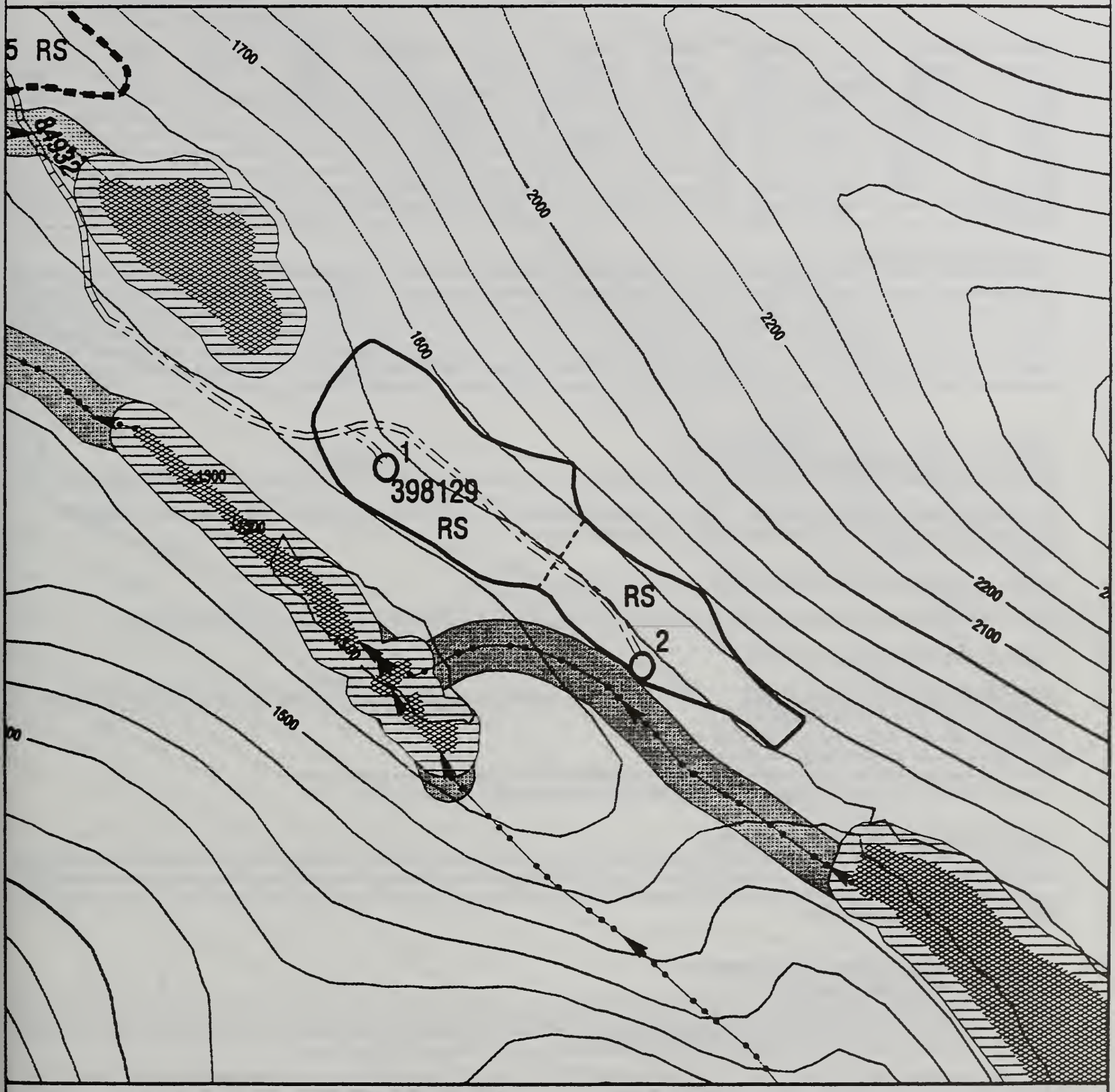
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398129 ALTERNATIVE(S): C

ACRES: 24.63 TOTAL NET MBF: 708.6 QUAD(S): SUMB4 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 58 ROLL NO.: 1184 PRINT NO.: 164



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398130 MAP# 22 ACRES: 95

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 58 PHOTO #'S: 1184-165

ALTERNATIVE(S): D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	18.5	19%	XC	410	48	M	MP	-	M	M
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	38.9	78.8	81%	H	110-120	70	M	G	-	H	H
VC-7	55.0	-	-								
Low	5.5	-	-								
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		97.3	100%	-	-	66	M	G	-	H	H

STAND CHARACTERISTICS

Two-storied stand in the W. hemlock mixed conifer series. This stand also has minor amounts Sitka spruce, Y. cedar in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 60% on aspects from NE to NW which are bisected by several medium to small creeks. The eastern portion of the unit is separated from the balance of the unit by a Class II creek and low site areas. Overstory ages are 300+ years old with high defect and significant amounts of conk, mechanical/animal damage, and old top kill from defoliators and/or wind/ice damage. The merchantable understory is 120 to 180 years old and generally in good condition. The understory of reproduction is 20% stocked with 20 to 50 year old W. hemlock in groups throughout with poor to fair vigor. Ground cover is sparse over most of the area with vaccinium associated with shield fern and skunk cabbage. Scattered new windthrow found throughout the unit. The current stand structure is the result of several wind events, in particular one about 130 years ago. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Paper plan road deleted. Laid out as helicopter unit. Fly logs to barge at North Arm of Port Houghton. Not economical to fly pulp logs.

Visual Resource Management: VQO-modification. Steep slope creates "Billboard" condition which will heighten visual change. Clearcut will result in maximum modification which will exceed VQO. Consider group selection or other partial harvest.

Soils / Geology: See prefield.

Fisheries / Watershed: Recommend leaving green trees around Class III streams.

Wildlife: Suitable habitat for red breasted sapsucker, marten and black bear. Recommend leaving reserve trees and snags to maintain habitat structure.

Cultural / Recreation / Subsistence: No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

Unit located in modification VQO visual objectives.
Wildlife habitat objectives include retention of green trees and snags.
Fisheries/Watershed recommend to leave trees at Class III streams.
The stands in question lend themselves to selective harvest and group selection because of their uneven age stand structure.
The unit is located in a LUD III area which calls for timber production to be subordinate to other resource concerns.

RATIONALE FOR ALTERNATIVE SELECTION

Overstory removal and group selection. Group Selection on the eastern "Island" of the unit to protect adjacent Class III streams and remove portions of the stand that are in decline. Overstory removal for the main portion of the unit in volume Class IV and VI which is a generally healthy multiple age stand. Also remove/sanitize minor amounts of understory with mechanical or animal damage. Reserve the low site area located in the south central portion of the unit. This treatment will retain the visual quality of the area as well as maintain habitat structure.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

East "Island" of the unit is bounded on the west by a Class II buffer and on the east by Class IV soils. The main portion of the unit is bounded by the Class II buffer and low site areas on the east and muskeg /low site areas on the southeast. The balance of the unit is generally laid out along contours at the 850 foot and 1,400 foot levels, in order to minimize visual impact. During final layout exclude or reserve the small low site area in the south central portion of the unit.

Soil, Water, and Wildlife Conservation:

BMP 12.6: Partial harvest will mitigate impacts to adjacent Class II streams.
BMP 13.5: Leaving live trees near streams leaves root structure.
BMP 18.1: Vertical structure and snags are maintained.

Forest Productivity Activities:

Promote growth of healthy understory to replace current overstory.

MONITORING PLAN

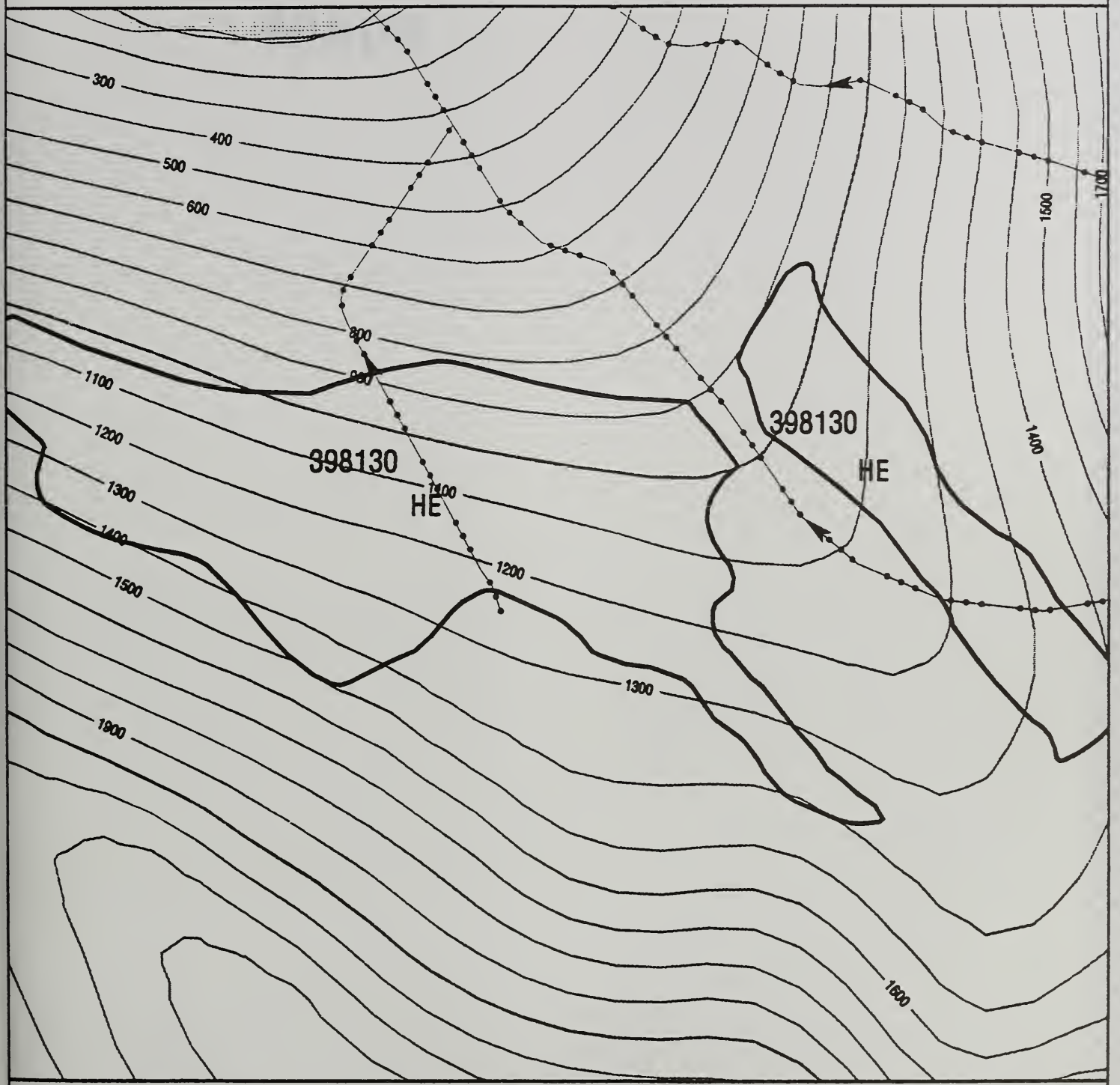
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398130 ALTERNATIVE(S): D

ACRES: 97.31 TOTAL NET MBF: 2698 QUAD(S): SUMB4 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 58 ROLL NO.: 1184 PRINT NO.: 165



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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Area Cards with Multiple Maps

PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 860, 870 , 890

UNIT #: Salvage(261,271,291)

ACRES: 751

MAP: Salvage

ALTERNATIVES: B,D

AERIAL PHOTO YEAR: 1989

FLIGHTLINE & PHOTO #'S:

25	888-179
25	888-180
26	888-167
26	888-168
1987-51	684-153
28	988-202
28	988-203
28	988-204

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	14.3	347.7	61%	HC-XC	-	50	L	MP	H	L	L
VC-5	24.2	200.9	35%	HC-WH	-	60	M	MP	M	M	M
VC-6	37.5	11.0	2%	WH-HC	-	80	H	M	L	H	H
VC-7	66.2	7.0	1%	WH-S	-	100	H	G	L	H	H
Low	6.4	0.9	0%	XC	-	45	L	P	L	L	L
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		567.5	100%	-	-	55	L	MP	Cedar Declin {Kind}	L	L

STAND CHARACTERISTICS

Mid elevation stands of medium sawtimber with moderate to high defect and mortality. Most areas identified for helicopter sanitation/salvage are open canopy stands in the WH-YC series. Yellow cedar is up to 50% of stand volume. Cedar decline is evident in moderate to high amounts and mortality is also high in the hemlock and spruce. Well over half of the dead cedar has no salvage value. Stand structure varies from uneven-aged to functionally even-aged. Advanced regeneration occupies from 20-30% of growing space in the VC 4. Understory vegetation is heavy to blueberry and skunk cabbage . Rusty menzesia is common but seldom dominates. Soil drainage is poor to moderately poor . Potential productivity and cedar decline are correlated to the poor soil drainage. Most slopes are under 40%, Topography is broken because of pits and mounds from mortality and windthrow. Most of the stands are relatively windfirm because of position on slope, open stand structure, tree height, and prominence of yellow cedar. Merchantable timber is almost all over 250 yrs old. Potential productivity is fair to moderate.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: (1) Skyline systems are not feasible for sanitation salvage Rx. (2) Sanitation-salvage is feasible with helicopter. (3) Helicopter EYD can be maintained below 4000 ft and landings from conventional units be used. (4) High value of yellow cedar.

Visual Resource Management: (1) VQO: Modification; VAC: High.

Soils / Geology: (1) No concerns given helicopter partial harvest.

Fisheries / Watershed: (1) Maintain no harvest 100 foot TTRA no-cut buffers on Class 1 and 2 streams.

Wildlife: (1) Treatment areas are retained buffers between regeneration units and likely travel corridors and thermal cover. (2) Maintain vertical habitat structure in harvest units where feasible . (3) Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented. (4) Avoid flight paths in mountain goat kidding habitat from mid May through June.

Cultural / Recreation / Subsistence: (1) No concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Sanitation - salvage of overmature and diseased stand.
(2) Improve timber volume and value productivity .
(4) Maintain vertical structure and cavity nesting habitat where not in conflict with logging systems feasibility.

RATIONALE FOR ALTERNATIVE SELECTION

Sanitation-salvage is the selected alternative because: (1) Provides a high value yield from a defective stand with high potential and low current net productivity; (2) Leave tree identification should leave a thrifty stand of good phenotype and release existing advanced regeneration. (3) Salvages high value cedar and maintains merchantable cedar growing stock in good condition ; and (4) Maintains travel corridors and vertical and cavity nesting habitat structure,. Helicopter harvest is flexible in regards to Rx. Clearcut would provide a 50% higher timber yield but is less conservative of YC growing stock and visual, wildlife, and watershed impacts are greater. CC with reserves, shelterwood with reserves , or group selection would be deferred because of adjacent regeneration units. Defer would not provide a timber yield and would not treat a relatively low impact yet high valued harvest. An opportunity for one dimension of adaptive management of yellow cedar would be forgone.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

The unit is leave strips between regeneration units and helicopter settings in the area of moderate to high cedar decline within VCU 860, 870, and 890. Attention should be taken to insure that 100 ft no-cut buffers are flagged during layout on Class 1 and 2 streams. See map.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Buffer class 1 and 2 streams.
BMP 13.9: Helicopter yarding to minimize impact.
BMP 18.1: Wildlife habitat retention--green culls > 24" DBH.

Forest Productivity Activities:

Sanitation treatment will remove diseased trees that are no longer capable of long-term sustainable production. This will make growing space available for more vigorous trees that will better utilize the capabilities of the site. Salvage of dead trees is not expected to affect site productivity.

MONITORING PLAN

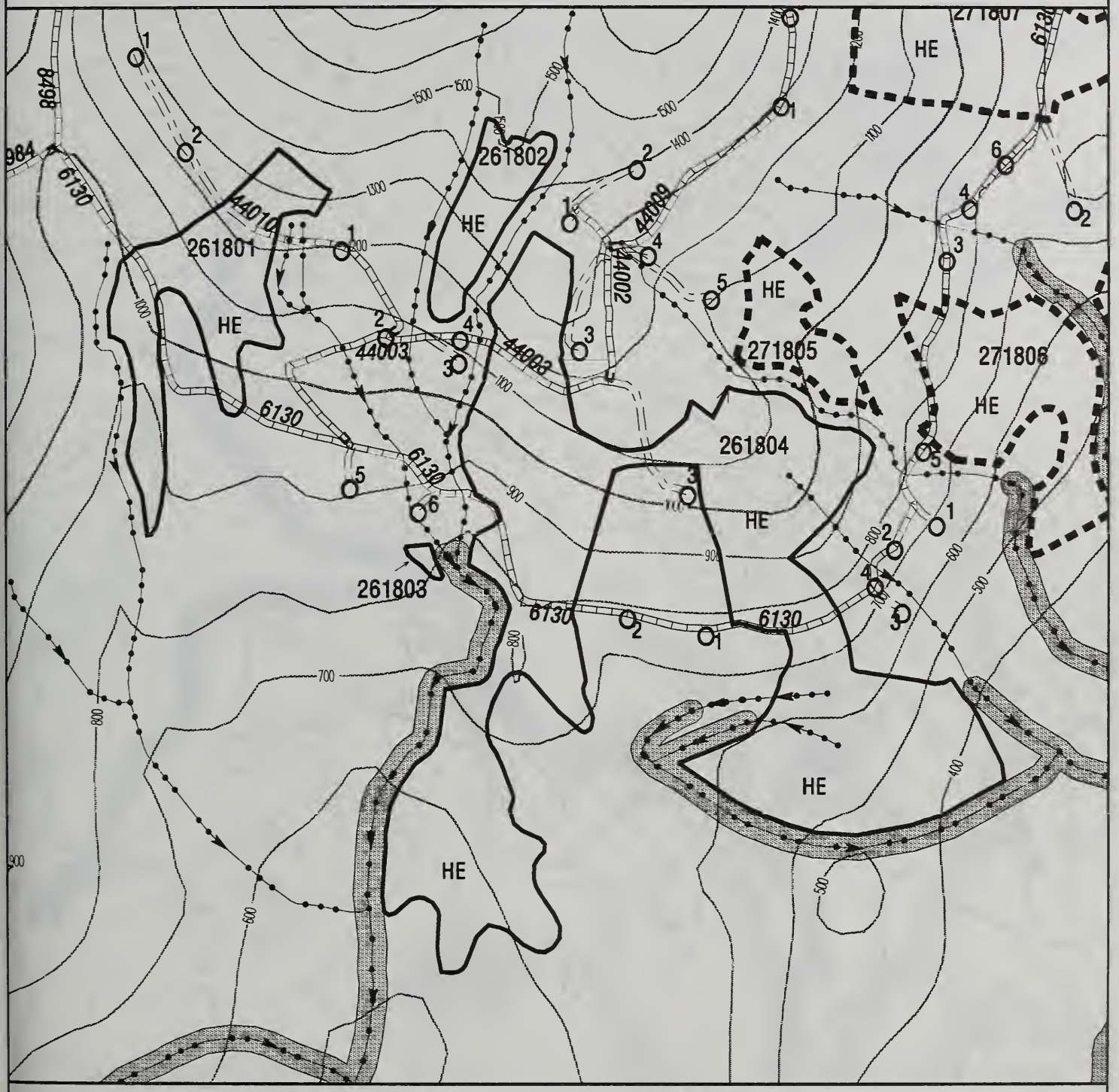
Date	Activity	Standard	Who
Year 1	Unit Acceptance and completion of erosion control	TS Contract	Sale Admin
Year 1	Evaluation of stand condition and health	Silvi Rx	Silviculturist
Year 10	Stand Examination: Reevaluation of stand health	TSE eval. - No monitoring standards set	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 86 UNIT(S): SALVAGE ALTERNATIVE(S): B D MAP 1 OF 4

ACRES: 303.68 TOTAL NET MBF: 11749.3 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 135



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:15840 1 INCH = 1320 FEET

0 1320 2640 3960 FEET

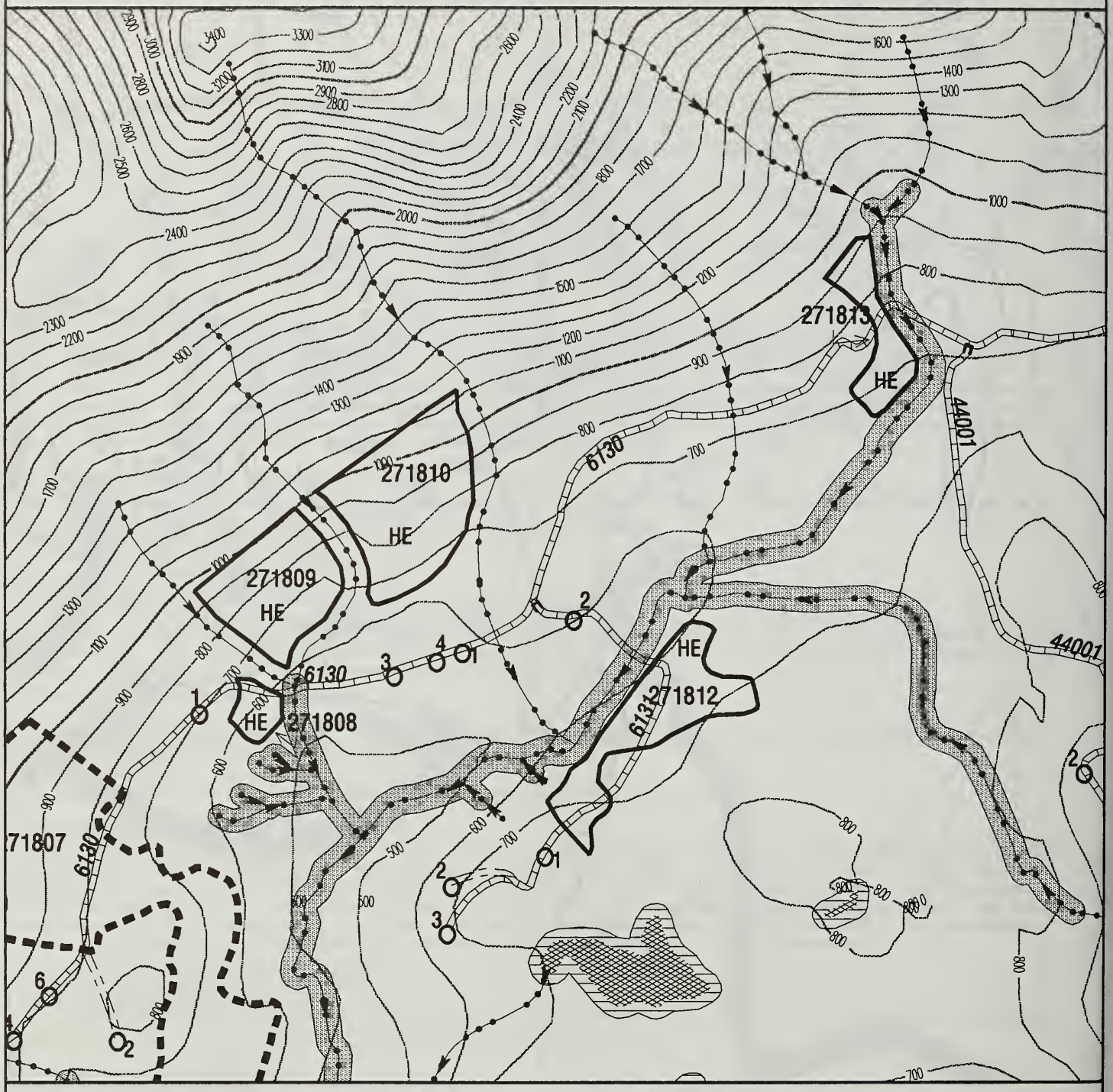
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PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT(S): SALVAGE ALTERNATIVE(S): B D MAP 2 OF 4

ACRES: 89.99 TOTAL NET MBF: 11749.3 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 153



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:15840 1 INCH = 1320 FEET

0 1320 2640 3960 FEET

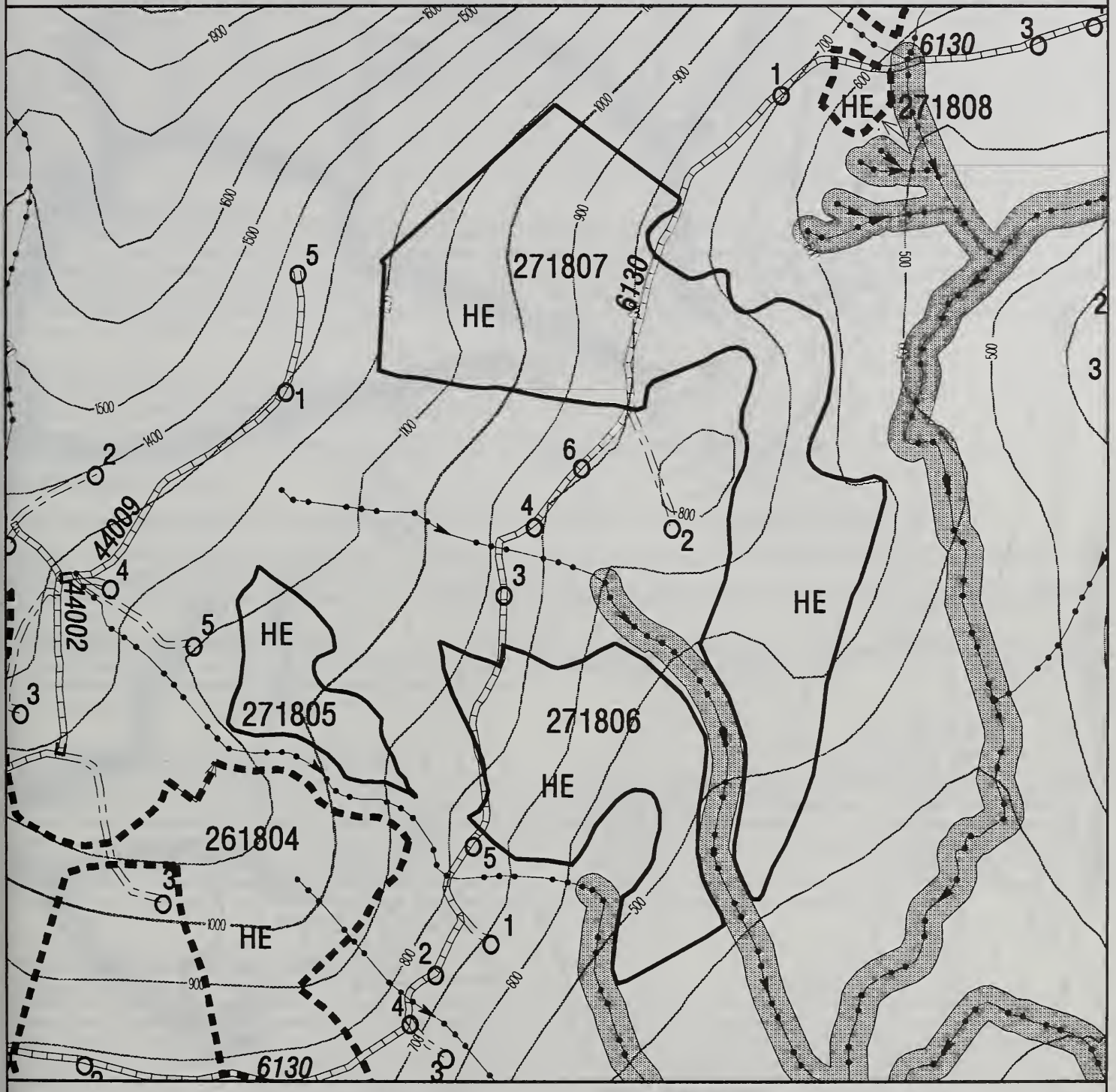
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PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 87 UNIT(S): SALVAGE ALTERNATIVE(S): B D MAP 3 OF 4

ACRES: 186.36 TOTAL NET MBF: 11749.3 QUAD(S): SUMA5 QUARTER QUAD(S): NE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 26 ROLL NO.: 888 PRINT NO.: 168



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

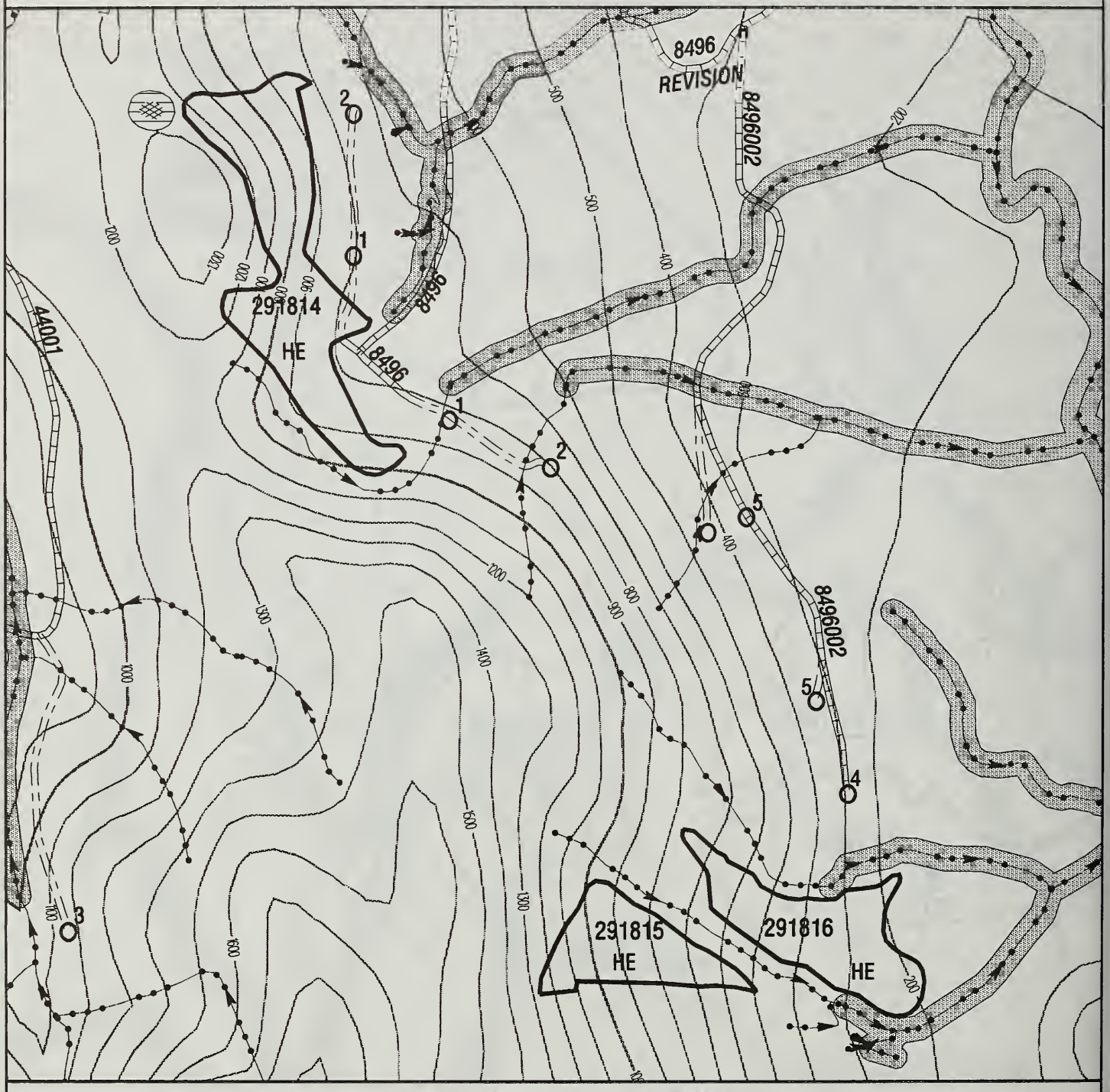
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PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 89 UNIT(S): SALVAGE ALTERNATIVE(S): B D MAP 4 OF 4

ACRES: 99.25 TOTAL NET MBF: 11749.3 QUAD(S): SUMA4 QUARTER QUAD(S): NW

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 28 ROLL NO.: 988 PRINT NO.: 204



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:15840 1 INCH = 1320 FEET

0 1320 2640 3960 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU: 82 UNIT #: 321GROUP MAP # GROUP 321 ACRES: 164

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 47 PHOTO #'S: 684-105

ALTERNATIVE(S): D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.5	139.0	85%	HC	210 230	45	L	MP	L	M	L
VC-5	27.0	19.4	12%	HC	210 230	55	M	MP	L	M	L
VC-6	39.5	3.2	2%	H	230	70	M	M	L	H	M
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	3.0	2.4	1%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		**164.0**	**100%**	-	-	**46**	**L**	**MP**		**M**	**L**

STAND CHARACTERISTICS

Generally mosaic and multiple storied stands in the W. hemlock/Y. cedar and mixed conifer series. These stands include scattered Sitka spruce and Mt. Hemlock in the overstory. The stand is composed of large, high quality sawtimber with moderate amounts of utility pulp. Slopes range from 0 to 30% on aspects from NW to NE. The designated areas are bounded by muskeg/ lowsite. Overstory ages are 150 to 300 years old with moderate defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage, defoliators, and windthrow. The understory is <20% stocked with 20 to 40 yearold W. hemlock and Sitka spruce which occur in groups throughout with poor to fair vigor. Ground cover is moderate to dense vaccinium associated with rusty menziesia, and skunk cabbage. Minor new windthrow found throughout the area. Site is fair over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter- Yard to enlarged landing at units 321004 or 321010.

Visual Resource Management: VQO: Partial Retention. Group selection on flat areas not seen or hidden. Should meet VQO.

Soils / Geology: No concerns.

Fisheries / Watershed: Minimum 100 ft. buffers must be maintained for all Class I/II streams. An important salmon stream is 500 ft. north of unit.

Wildlife: Group within 6,000 acre foraging area of goshawk. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Cultural / Recreation / Subsistence: Group selection areas are above 100 foot elevation and a minimum of 1000 feet from shore. Not in high probability for cultural resource impact.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Provide moderate timber volume and value productivity from isolated stands that are predominantly in volume class IV.
2) Provide vertical and cavity nesting habitat structure within managed stands.
3) Enhance proportionality by adding significant areas of volume class IV.

RATIONALE FOR ALTERNATIVE SELECTION

Group Selection: Create one to two acre openings removing all trees except occasional yellow cedar legacy trees as described below. Openings should fit the landscape which in this case is near flat to gentle slope. In areas adjacent to class III streams use the streams as boundaries for some openings. Do not cross a stream with an opening unless multiple forks are involved, then use the largest fork as a boundary. Leave Sitka spruce and Yellow cedar on the edge of the openings when found in the area. Avoid leaving trees infected with Dwarf mistletoe on the edge of the openings. This scheme will require 4 to 5 entries over 100 years where almost all the timber will be removed from these areas. During the ensuing entries it will be possible to designate patches of reserve trees or reserve areas. These areas will more than likely have a significant amount of snags, green culls, young timber or natural thrifty reproduction. Large (30">) defective yellow cedar can be left throughout the area whenever they are encountered. This prescription will provide long term vertical habitat, mitigate visual impacts, and assist proportionality.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

This is an area group selection on timberlands generally in the volume class 4 strata at the northern end of the 321 watershed. These areas were photo maped and visited during the 1994 field season to confirm there viability as timberland in the volume class 4 strata. The areas designated are small hills and elevated areas that are often surrounded or adjacent to low site and muskeg areas. The actual location of the individual group openings will not occur until final layout. The areas identified are at least 1000 feet from the shoreline of Port Houghton and 120 feet or more from designated class II and higher streams. Select boundaries that appear windfirm retain S. spruce and Y. cedar on the edges of openings when found.

Soil, Water, and Wildlife Conservation:

BMP 13.3: Openings will not cross class III streams.
BMP 13.9: Suspended Log Yarding - Helicopter.
BMP 18.1: Group selection provides habitat structure and avoids damage to fish habitat.

Forest Productivity Activities:

During precommercial thinning favor Sitka spruce and yellow cedar; also treat regeneration for dwarf mistletoe as needed.

MONITORING PLAN

Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT(S): GROUP321 ALTERNATIVE(S): D MAP 1 OF 2

ACRES: 17.67 TOTAL NET MBF: 2208.8 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 48 ROLL NO.: 684 PRINT NO.: 118



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

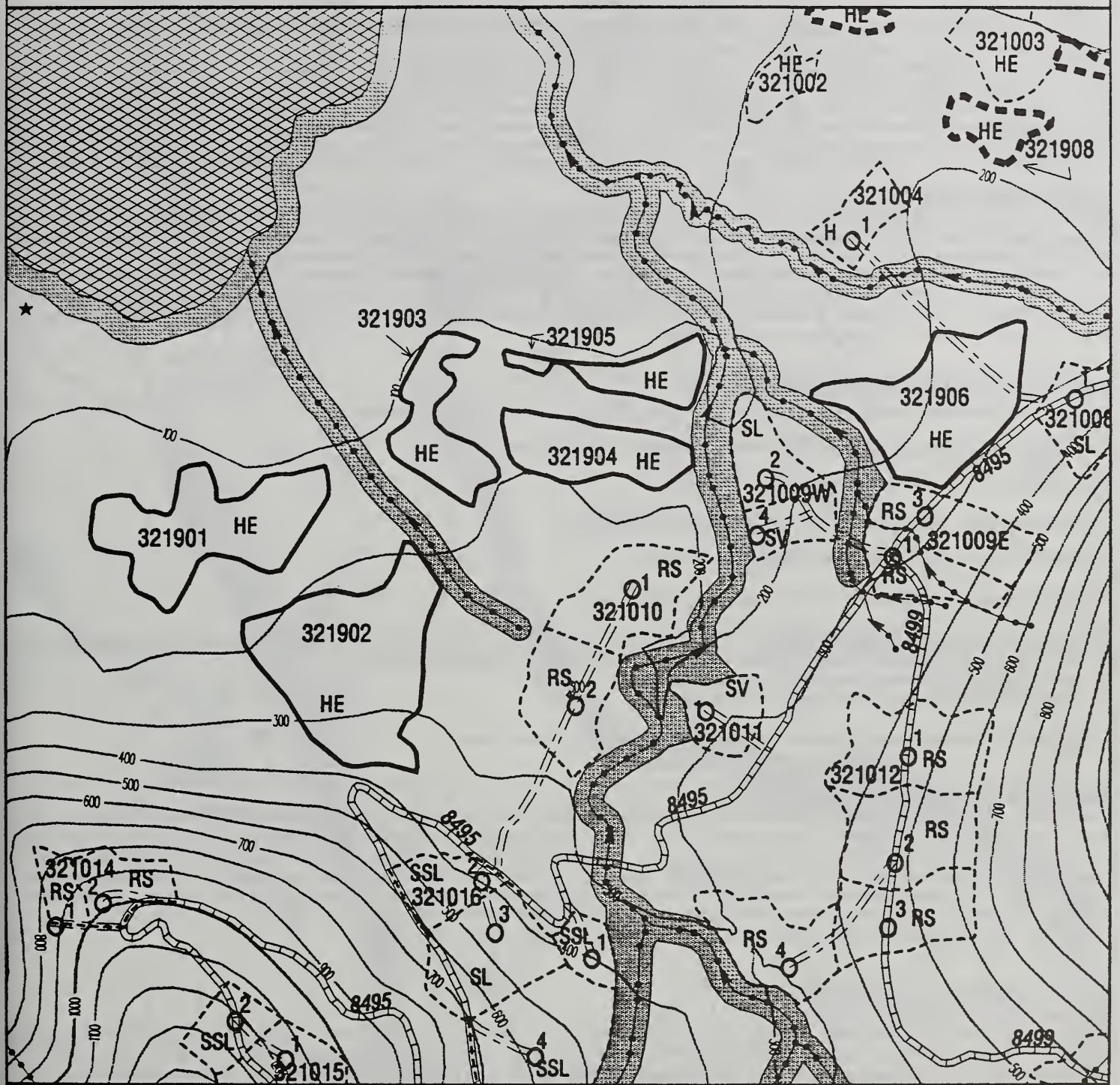
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PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT(S): GROUP321 ALTERNATIVE(S): D MAP 2 OF 2

ACRES: 146.36 TOTAL NET MBF: 2208.8 QUAD(S): SUM85 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 24 ROLL NO.: 888 PRINT NO.: 196



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:15840 1 INCH = 1320 FEET

0 1320 2640 3960

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	82	UNIT #:	322GROUP	MAP #:	GROUP 322	ACRES:	204
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	49			PHOTO #'S:	684-124
						ALTERNATIVE(S):	D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	13.6	139	71%	HC	210 230	45	L	MP	L	M	L
VC-5	26.9	25	13%	HC	210 230	55	M	MP	L	M	L
VC-6	39.4	14	7%	H	230	60	M	MP	L	M	L
VC-7	56.8	-	-	-	-	-	-	-	-	-	-
Low	5.0	18	9%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		195	100%	-	-	43	L	MP	Mistletoe	M	L

STAND CHARACTERISTICS

Generally mosaic and multiple storied stands in the W. hemlock/Y. cedar and mixed conifer series. These stands include scattered Sitka spruce and Mt. Hemlock in the overstory. The stand is composed of medium size, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 40% on aspects from NW to NE which are bisected by 2 significant V-notch creeks. These areas are typically surrounded or adjacent to lowsite or muskeg lands. Overstory ages are 150 to 300 years old with moderate defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage, defoliators, and windthrow. The understory is typically <20% stocked with 20 to 40 year old W. hemlock and Sitka spruce which occur in groups throughout with poor to good vigor. Ground cover is moderate to dense vaccinium associated with rusty menziesia, and skunk cabbage. Significant new windthrow found throughout the area. Site is fair over the unit as a whole. These areas are isolated stands of timber where road construction is not feasible or economically desirable.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter yard to expanded landings in units 322031 and 331045. Pulp unlikely to be economical.

Visual Resource Management: Midground; VQO modification. Group selection should meet VQO.

Soils / Geology: No concerns identified in these areas.

Fisheries / Watershed: Maintain minimum 100' buffer along Class II streams.

Wildlife: Suitable black bear, marten, and red-breasted sapsucker habitat.

Cultural / Recreation / Subsistence: No concerns; areas lie above 100' elevation.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Provide moderate timber volume and value productivity from isolated stands that are predominantly in volume class 4.
2) Provide vertical and cavity nesting habitat structure within managed stands.
3) Enhance proportionality by adding significant areas of volume class 4.

Group Selection Sub-Units are bounded by low productivity areas and TTRA Class-I & II stream buffers.

RATIONALE FOR ALTERNATIVE SELECTION

Group Selection: Create one to two acre openings removing all trees except occasional Yellow cedar legacy trees as described below. Openings should fit the landscape which in this case is near flat to gentle slope. In areas adjacent to class III streams use the streams as boundaries for some openings. Do not cross a stream with an opening unless multiple forks are involved, then use the largest fork as a boundary. Leave Sitka spruce and Yellow cedar on the edge of the openings when found in the area. Avoid leaving trees infected with Dwarf mistletoe on the edge of the openings. This scheme will require 4 to 5 entries over 100 years where almost all the timber will be removed from these areas. During the last two entries it will be possible to designate patches of reserve trees or reserve areas. These areas will more than likely have a significant amount of snags, green culls, young timber or natural thrifty reproduction. Large (30">) defective Yellow cedar can be left throughout the area at any time they are encountered. This prescription will provide long term vertical habitat, mitigate visual impacts, and assist proportionality.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

This is an area group selection on timberlands generally in the volume class 4 strata at the northern end of the 321 watershed. These areas were photo mapped and visited during the 1994 field season to confirm there viability as timberland in the volume class 4 strata. The areas designated are Sub-Units located on small hills and elevated areas that are often surrounded or adjacent to low site and muskeg areas. The actual location of the individual group openings will not occur until final layout. The areas identified are at least 1,000 feet from the shoreline of Port Houghton and 120 feet or more from designated class II and higher streams. Select boundaries that appear windfirm.

Soil, Water, and Wildlife Conservation:

Forest Productivity Activities:

During precommercial thinning favor Sitka spruce and Yellow cedar; also treat regeneration for dwarf mistletoe as needed.

MONITORING PLAN

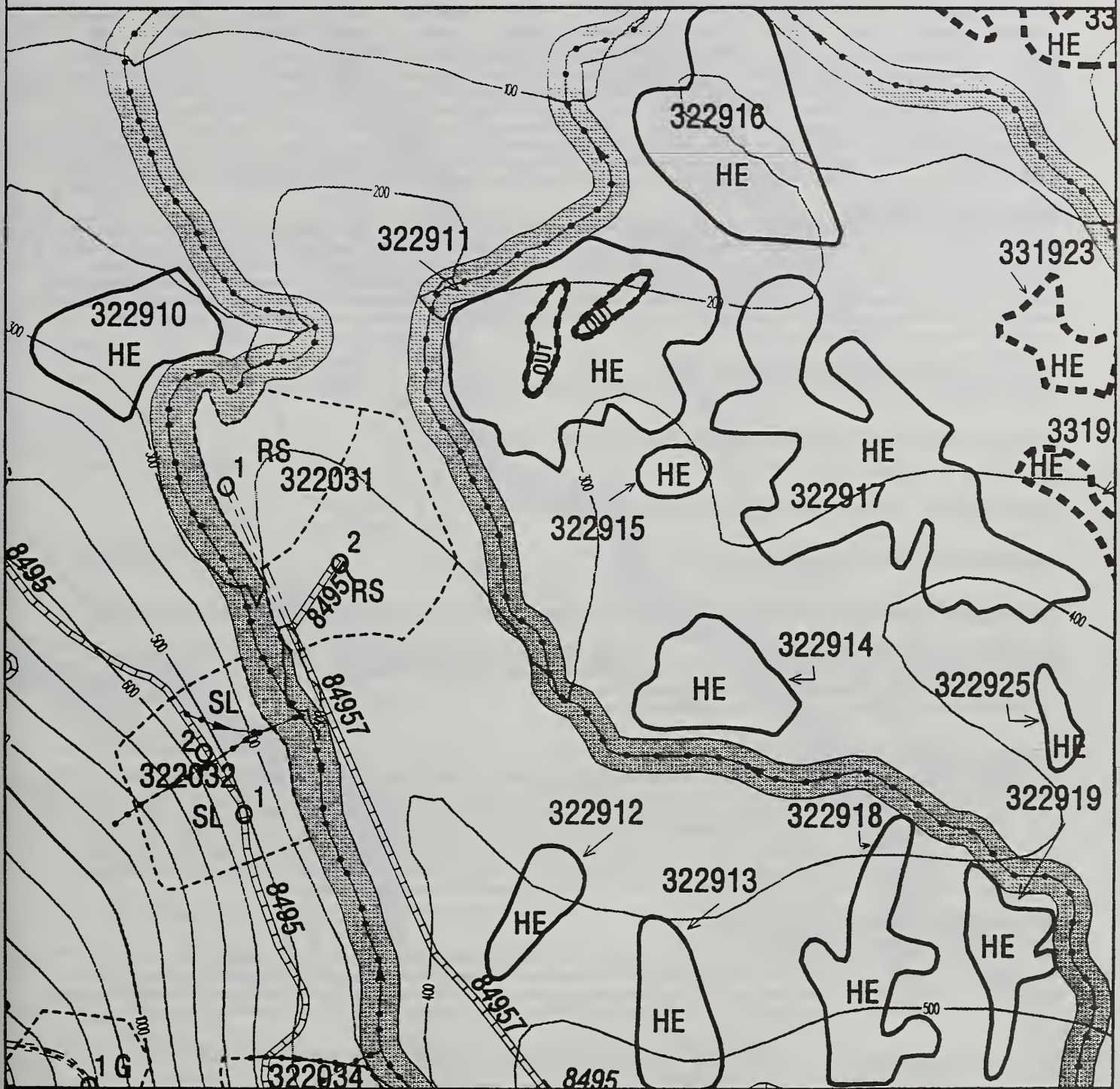
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 82 UNIT(S): GROUP322 ALTERNATIVE(S): D

ACRES: 186.28 TOTAL NET MBF: 2569.8 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1989 FLIGHT LINE: 25 ROLL NO.: 888 PRINT NO.: 174



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

I. UNIT IDENTIFICATION

VCU:	83	UNIT #:	331GROUP	MAP:	Group 331	ACRES:	50
AERIAL PHOTO YEAR:	1987	FLIGHT LINE	50			PHOTO #'S:	684-141
							684-142
						ALTERNATIVE(S):	D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	36.1	81%	HC	210 230	45	L	MP	L	M	L
VC-5	27.8	8.3	19%	HC	210 230	55	M	MP	L	M	L
VC-6	37.6	-	-	-	-	-	-	-	-	-	-
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	2.5	0.4	1%	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		44.8	100%	-	-	47	L	MP	Mistletoe	M	L

STAND CHARACTERISTICS

Generally mosaic and multiple storied stands in the W. hemlock/Y. cedar and mixed conifer series. These stands include scattered Sitka spruce and Mt. Hemlock in the overstory. The stand is composed of medium size, moderate quality sawtimber with significant amounts of utility pulp. Slopes range from 0 to 30% on aspects from NW to NE slops. These areas are adjacent to low site areas and muskeg. Overstory ages are 150 to 300 years old with moderate defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage, defoliators, and windthrow. The understory is typically <20% stocked with 20 to 40 year old W. hemlock and Sitka spruce which occur in groups throughout with poor to fair vigor. Ground cover is moderate to dense vaccinium associated with rusty menziesia, and skunk cabbage. Significant new windthrow found throughout the area. Site is fair over the unit as a whole. The areas proposed for group selection are generally isolated to the point that road construction is not desirable or economically feasible.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter yard to expanded landings at unit 322031,331045, 331046, or 332066

Visual Resource Management: VQO partial retention. Openings hidden or not seen. Should meet VQO.

Soils / Geology: No concerns.

Fisheries / Watershed: Maintain 100' buffers along all streams with potential fish habitat.

Wildlife: Suitable black bear and red-breasted sapsucker habitat.

Cultural / Recreation / Subsistence: Group selection is at least 100 foot elevation and 1,000 feet from shore- outside of high potential for cultural resource impact.

INTEGRATED RESOURCE OBJECTIVES

(Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities)

(1) Provide moderate timber volume and value productivity from isolated stands that are predominantly in volume class IV.
(2) Provide vertical and cavity nesting habitat structure within managed stands.
(3) Enhance proportionality by adding significant areas of volume class IV.

RATIONALE FOR ALTERNATIVE SELECTION

Group Selection: Create one to two acre openings removing all trees except occasional yellow cedar legacy trees as described below. Openings should fit the landscape which in this case is near flat to gentle slope. In areas adjacent to class III streams use the streams as boundaries for some openings. Do not cross a stream with an opening unless multiple forks are involved, then use the largest fork as a boundary. Leave Sitka spruce and Yellow cedar on the edge of the openings when found in the area. Avoid leaving trees infected with Dwarf mistletoe on the edge of the openings. This scheme will require 4 to 5 entries over 100 years where almost all the timber will be removed from these areas. During the ensuing entries it will be possible to designate patches of reserve trees or reserve areas. These areas should have a significant amount of snags, green culls, young timber or natural thrifty reproduction. Large (30">) defective Yellow cedar can be left throughout the area at any time they are encountered. This prescription will provide long term vertical habitat, mitigate visual impacts, and assist proportionality.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

This is an area group selection on timberlands generally in the volume class 4 strata at the northern end of the 331 watershed. These areas were photomapped and visited during the 1994 field season to confirm there viability as timberland in the volume class 4 strata. The areas designated are small hills and elevated areas that are often surrounded or adjacent to low site and muskeg areas. The actual location of the individual group openings will not occur until final layout. The areas identified are at least 1000 feet from the shoreline of Port Houghton and 120 feet or more from designated class II and higher streams. Select boundaries that appear windfirm.

Soil, Water, and Wildlife Conservation:

Openings will not cross class III streams.

Forest Productivity Activities:

During precommercial thinning favor Sitka spruce and Yellow cedar; also treat regeneration for dwarf mistletoe as needed.

MONITORING PLAN

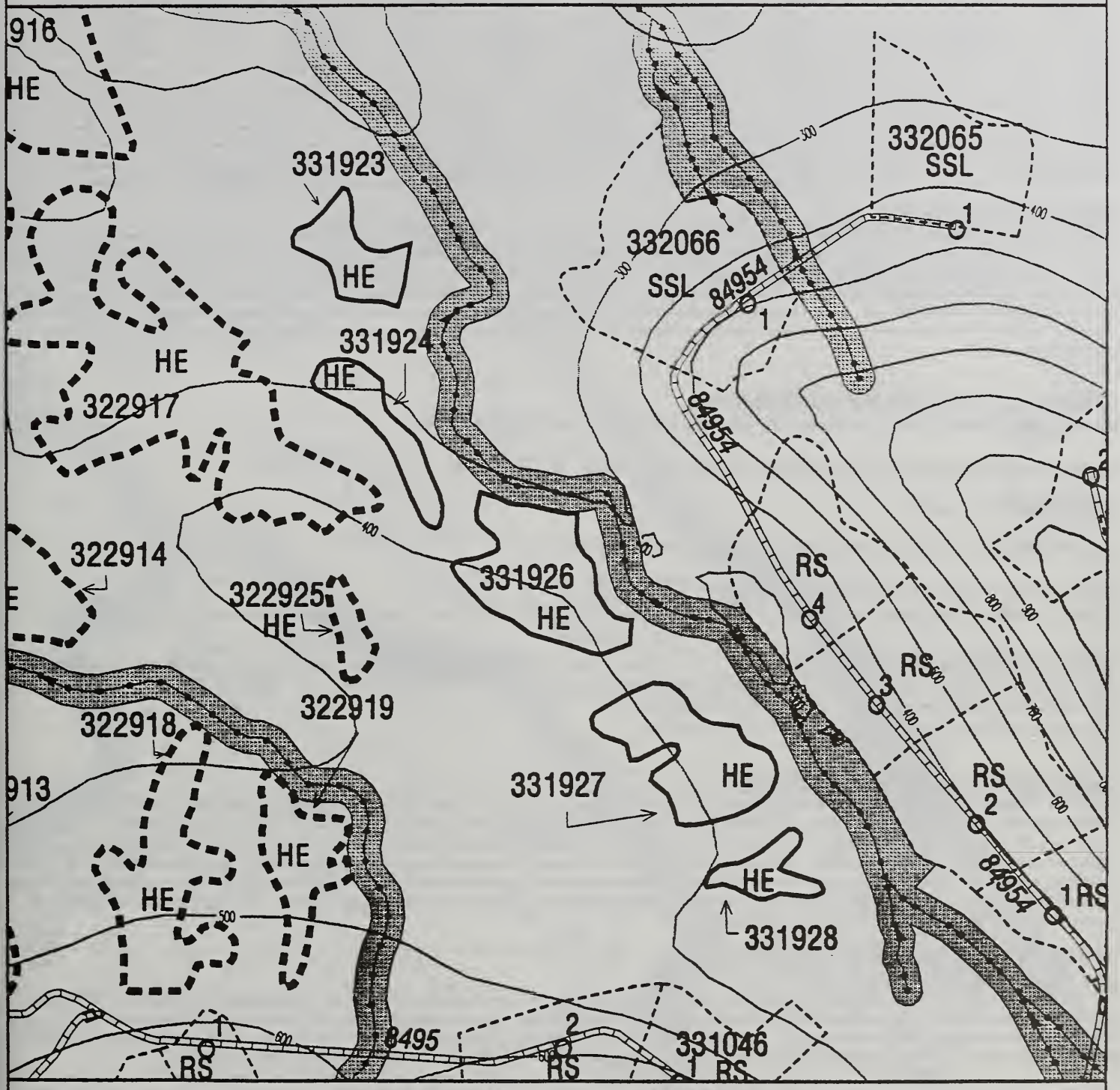
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT(S): GROUP'331 ALTERNATIVE(S): D

ACRES: 44.80 TOTAL NET MBF: 602.2 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 141



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION

VCU:	83	UNIT #:	332GROUP	MAP #:	GROUP 332	ACRES:	50
AERIAL PHOTO YEAR:	1987	FLIGHT LINE:	50			PHOTO #'S:	684-159 684-142
						ALTERNATIVE(S):	D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	12.7	84.3	56%	HC	210 230	45	L	MP	L	M	L
VC-5	27.8	22.8	15%	HC	210 230	55	M	MP	L	M	L
VC-6	37.6	27.3	18%	WH	160-120	60.00	H	M	-	M	M
VC-7	55.0	0.0	0%	-	-	-	-	-	-	-	-
Low	2.5	16.8	11%	XC	420-430	35.00	L	P	-	L	L
Non-Commercial		0.0	0%	-	-	-	-	-	-		-
Unit Attributes		151.2	100%	-	-	44	L	MP	Mistletoe {Kind}	M	L

STAND CHARACTERISTICS

Generally mosaic and multiple storied stands in the W. hemlock/Y. cedar and mixed conifer series. These stands include scattered Sitka spruce and Mt. Hemlock in the overstory. The stand is composed of medium size, moderate quality sawtimber with significant amounts of utility pulp. Slopes ranges from 0 to 30% on aspects from NW to NE slopes. These areas are adjacent to low site areas and muskeg. Overstory ages are 150 to 30 years old with moderate defect and significant amounts of cedar decline, mistletoe, mechanical/animal damage, defoliators, and windthrow. The understory is typically <20% stocked with 20 to 40 year old W. hemlock and Sitka spruce which occur in groups throughout with poor to fair vigor. Ground cover is moderate to dense vaccinium associated with rusty menziesia, and skunk cabbage. Significant new windthrow found throughout the area. Site is fair over the unit as a whole. The areas proposed for group selection are generally isolated to the point that road construction is not desirable or economically feasible.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: Helicopter yard to expanded landings at unit 322031, 331045, 331046, or 332066.

Visual Resource Management: VQO partial retention. Openings hidden or not seen. Should meet VQO.

Soils / Geology: No concerns.

Fisheries / Watershed: Maintain 100' buffers along all streams with potential fish habitat.

Wildlife: Suitable black bear and red-breasted sapsucker habitat.

Cultural / Recreation / Subsistence: Group selection is at least 100 foot elevation and 1,000 feet from shore- outside of high potential for cultural resource impact.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

(1) Provide moderate timber volume and value productivity from isolated stands that are predominantly in volume class IV.
(2) Provide vertical and cavity nesting habitat structure within managed stands.
(3) Enhance proportionality by adding significant areas of volume class IV.

RATIONALE FOR ALTERNATIVE SELECTION

Create one or two acre openings removing all trees except occasional Yellow cedar legacy trees as described below. Openings should fit the landscape which in this case is near flat to gentle slope. In areas adjacent to class III streams use the streams as boundaries for some openings. Do not cross a stream with an opening unless multiple forks are involved, then use the largest fork as a boundary. Leave Sitka spruce and Yellow cedar on the edge of the openings when found in the area. Avoid leaving trees infected with Dwarf mistletoe on the edge of the openings. This scheme will require 4 to 5 entries over 100 years where almost all the timber will be removed from these areas. During the ensuing entries it will be possible to designate patches of reserve trees or reserve areas. These areas should have a significant amount of snags, green culls, young timber or natural thrifty reproduction. Large (30">) defective Yellow cedar can be left throughout the area at any time they are encountered. The prescription will provide long term vertical habitat, mitigate visual impacts, and assist proportionality.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

This is an area group selection on timberlands generally in the volume class 4 strata at the northern end of the 331 watershed. These areas were photomapped and visited during the 1994 field season to confirm there viability as timberland in the volume class 4 strata. The areas designated are small hills and elevated areas that are often surrounded or adjacent to low site and muskeg areas. The actual location of the individual group openings will not occur until final layout. The areas identified are at least 1000 feet from the shoreline of Port Houghton and 120 feet or more from designated class II and higher streams. Select boundaries that appear windfirm.

Soil, Water, and Wildlife Conservation:

Openings will not cross class III streams.

Forest Productivity Activities:

During precommercial thinning favor Sitka spruce and Yellow cedar; also treat regeneration for dwarf mistletoe as needed.

MONITORING PLAN

Year	Activity	Standard	Who
3	Stocking exam	>50 Sitka spruce & Y. cedar per acre	Silviculturist
5	Stocking exam	>300 well distributed TPA	Silviculturist
15	Precommercial thinning survey	>300 TPA with crown closure	Silviculturist
16-25	Schedule precommercial thinning	200 TPA free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT(S): GROUP332 ALTERNATIVE(S): D MAP 1 OF 2

ACRES: 24.62 TOTAL NET MBF: 2439.4 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 50 ROLL NO.: 684 PRINT NO.: 142



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

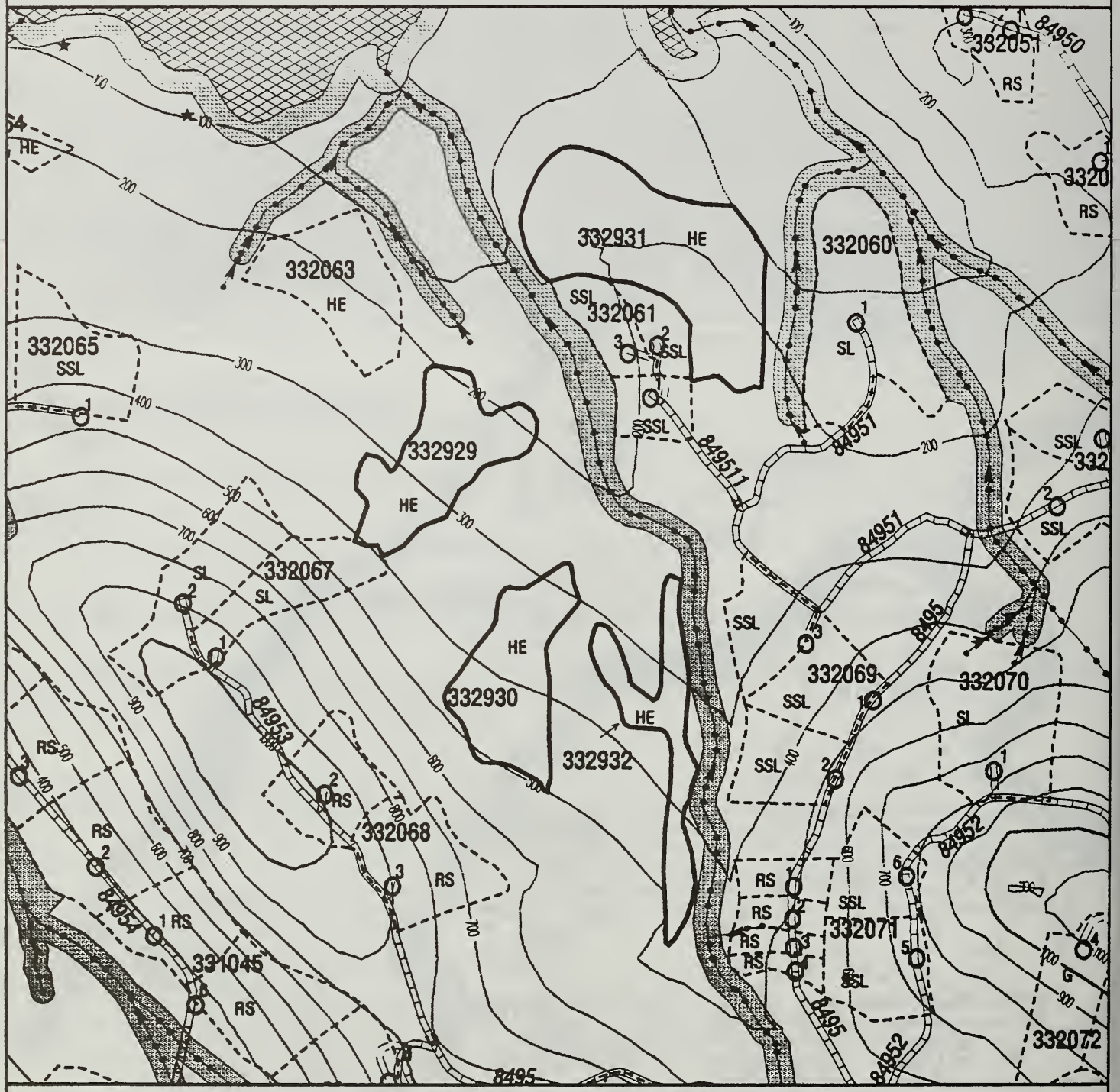
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PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 83 UNIT(S): GROUP332 ALTERNATIVE(S): D MAP 2 OF 2

ACRES: 126.75 TOTAL NET MBF: 2439.4 QUAD(S): SUMB5 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 51 ROLL NO.: 684 PRINT NO.: 148



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:

HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:15840 1 INCH = 1320 FEET

0 1320 2640 3960

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398127 MAP# GROUP 398 ACRES: 53

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 57 PHOTO #'S: 1184-145

ALTERNATIVE(S): C,D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series (two max)	Plant Assoc'n(s) (two max)	Site Index (+/-5 base 50)	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fail Risk L, M, H
VC-4	15.1	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	38.9	53.4	100%	H	110 120	65	H	G	L	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		53.4	100%	-	-	65	H	G	Mistletoe	H	M

STAND CHARACTERISTICS

Two-storied uneven-age stand in the W. hemlock series. This stand also has Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 60% on aspects from NE to S which are dotted with rock outcroppings. The northern portion of the unit is bounded by a small lake and buffer. Overstory ages are 150 to 300 years old with moderate defect and significant amounts of conk, light mistletoe, mechanical/animal damage, windthrow. The understory is 20-40% stocked with 20 to 100% year old W. hemlock and Sitka spruce which occur in groups throughout with poor to fair vigor. Ground cover is moderately dense Vaccinium associated with devils club skunk cabbage. Significant new windthrow found throughout the unit. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: The majority of the cutting area is below visibility from Port Houghton. Snags constitute a safety hazard. Partial cutting not feasible if conventional logging system is used. 8 stations temporary road. Tailtrees required.

Visual Resource Management: VQO: Modification. Viewed from Port Houghton. Unit in topographic bowl. Steep slopes create a "billboard" condition which will heighten visual change. Area may better qualify as Partial Retention. Consider group selection. (Note: Unit reconfigured to mitigate visual impacts)

Soils / Geology: No concerns.

Fisheries / Watershed: Fishless lake and Class III were surveyed. It is unlikely that fish would survive in the lake- "Dystrophic nature".

Wildlife: Suitable habitat for creeper, marten and black bear. Recommend leaving reserve trees and snags to maintain habitat structure.

Cultural / Recreation / Subsistence: No Concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Maintain stand structure for wildlife and minimize visual impacts.
2) Unit is located in a LUD III area where timber production must coexist or be subordinate with other with other uses.
3) One end suspension.

RATIONALE FOR ALTERNATIVE SELECTION

Conventional/Cable logging alternative: clearcut with reserves and feathered edges. Reserve trees or groups of trees that will reduce the visual contrast and shape the unit with scalloped edges at the edge of each setting. Reserve green culls or high defect trees that are not infected with dwarf mistletoe at a rate of 5 trees per acre. Between setting boundaries on upper slopes feather edges between settings by leaving groups of trees. 30% of area operable for heavy partial cut.
Helicopter alternative: Overstory removal. Remove about 30% of the basal area, of the current overstory in the salvage classification. Prioritize trees with Dwarf Mistletoe and damaged tops for removal. Remove minor amounts of the merchantable understory that has severe Dwarf Mistletoe or mechanical damage. Retain Overstory and understory trees in the classified as desirable, acceptable and a portion of the salvage classification. In the salvage classification retain trees that are heavy to conk and damaged on the lower bole with crown ratios of 35% or higher. Retain Green culls and snags when found, retain a proportion of Sitka Spruce. Some group selection possible.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Northern boundary is a bench area with a lake and buffer. The balance of the unit boundary is determined by the logical yarding limits. This unit was greatly reduced in size from the "paper plan" to mitigate visual impacts on Port Houghton. The upper slopes that would have given a billboard visual effect were not included in the unit. Final unit boundary configuration should be adjusted to accomodate transition to muskegs and low site areas.

Soil, Water, and Wildlife Conservation:

BMP 13.15: Unit configured to exclude and buffer muskeg and lake.
BMP 13.2: Timber harvest ensures water quality and soil productivity.
BMP 18.1: Reserve trees maintain habitat structure and snag recruitment.

Forest Productivity Activities:

1) Soil mixing and warming from logging disturbance and future blowdown.
2) Scheduled precommercial thinning- favor S. spruce when found.
These activities are geared toward the Clearcut with reserves alternative.

MONITORING PLAN

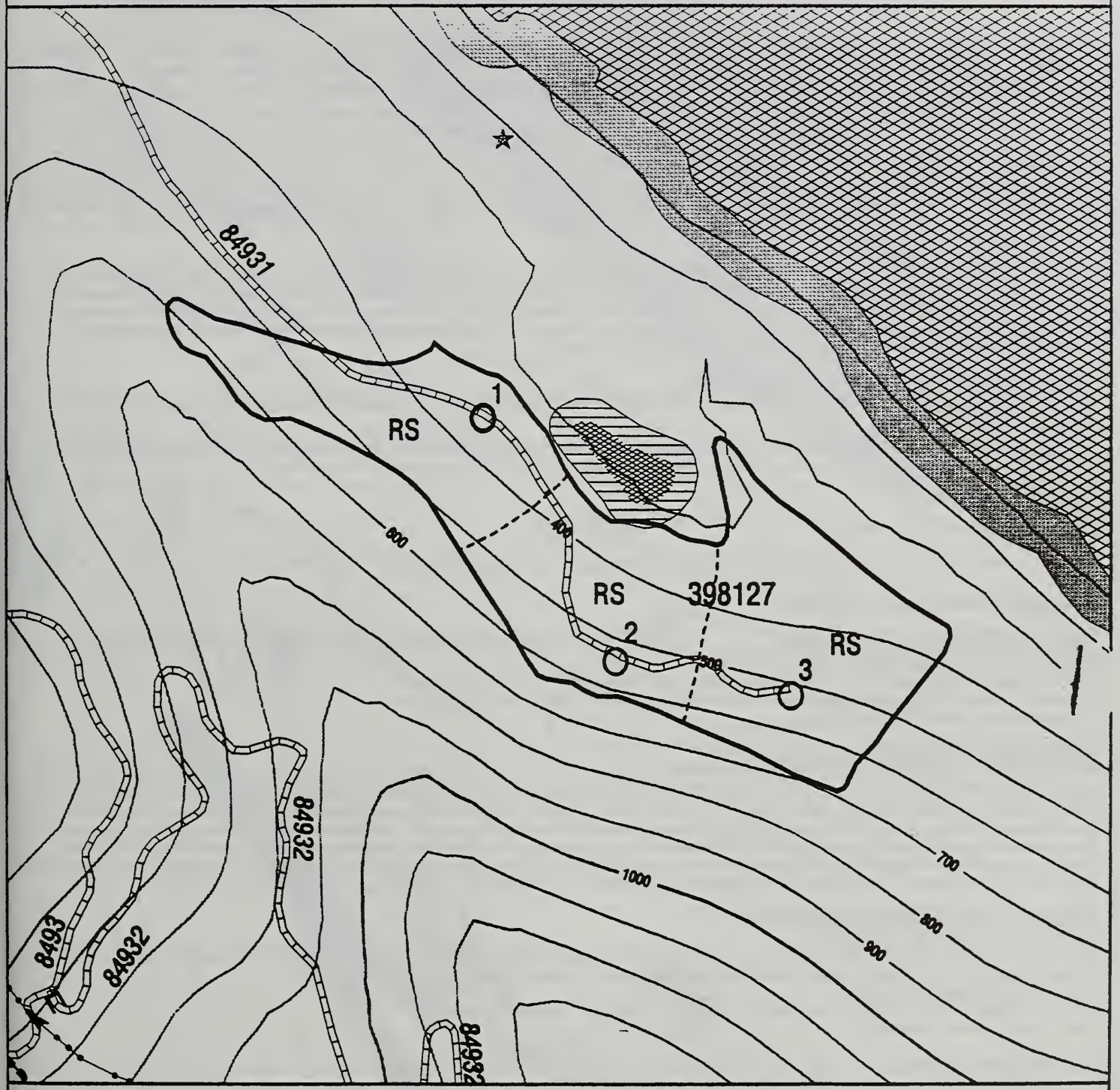
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist
15-20	PCT needs survey	PCT if>700 tpa, VC5+,resource need	Silviculturist
15-30	PCT post-treatment svy. and certification	200-400 trees/acre	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT: 398127 ALTERNATIVE(S): C D

ACRES: 53.36 TOTAL NET MBF: 1704.5 QUAD(S): SUMB4 QUARTER QUAD(S): SW

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 57 ROLL NO.: 1184 PRINT NO.: 145



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:7920 1 INCH = 660 FEET

0 660 1320 1980 FEET

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PORT HOUGHTON/CAPE FANSHAW UNIT SUMMARY CARD

UNIT IDENTIFICATION VCU: 79 UNIT #: 398127H MAP# GROUP 398 ACRES: 151

AERIAL PHOTO YEAR: 1987 FLIGHT LINE: 57 PHOTO #'S: 1184-145

ALTERNATIVE(S): D

Timber Volume Class	Strata Avg. Volume Net + Utility	Unit Acres	Percent Total Area	Forest Series {two max}	Plant Assoc'n(s) {two max}	Site Index {+/-5 base 50}	Windthrow Risk L,M,H,E	Soil Drainage P,MP,M,G,E	Forest Protection L,M,H	Regen. Potential L, M, H	Mass Fall Risk L, M, H
VC-4	15.1	-	-	-	-	-	-	-	-	-	-
VC-5	23.7	-	-	-	-	-	-	-	-	-	-
VC-6	38.9	150.9	100%	H	110 120	65	H	G	L	H	M
VC-7	55.0	-	-	-	-	-	-	-	-	-	-
Low	5.5	-	-	-	-	-	-	-	-	-	-
Non-Commercial		-	-	-	-	-	-	-	-	-	-
Unit Attributes		150.9	100%	-	-	65	H	G	Mistletoe	H	M

STAND CHARACTERISTICS

Two-storied to uneven-age stand in the W. hemlock series. This stand also has Sitka spruce in the overstory. The stand is composed of large, high quality sawtimber with significant amounts of utility pulp. Slopes range from 10 to 60% on aspects from NE which are dotted with rock outcroppings. Overstory ages are 150 to 300 years old with moderate defect and significant amounts of conk, light mistletoe, mechanical/animal damage, windthrow. The understory is 20-40% stocked with 20 to 100% year old W. hemlock and Sitka spruce which occur in groups throughout with poor to fair vigor. Ground cover is moderate vaccinium associated with devils club skunk cabbage. Significant new windthrow found throughout the unit. Site is good over the unit as a whole.

RESOURCE CONSTRAINTS AND OPPORTUNITIES

Roads / Logging Systems: The majority of the cutting area is below visibility from Port Houghton. Snags constitute a safety hazard. Partial cutting not feasible if conventional logging system is used.

Visual Resource Management: VQO: Modification. Viewed from Port Houghton. Unit in topographic bowl. Steep slopes create a "billboard" condition which will heighten visual change. Area may better qualify as Partial Retention. Consider group selection. (Note: Unit designed for Heli- Group selection.)

Soils / Geology: No concerns.

Fisheries / Watershed: No concerns.

Wildlife: Suitable habitat for creeper, martin and black bear. Recommend leaving reserve trees and snags to maintain habitat structure.

Cultural / Recreation / Subsistence: No Concerns.

INTEGRATED RESOURCE OBJECTIVES

{Note: To meet forest plan and project objectives in light of resource Constraints & Opportunities}

1) Minimize visual impacts on small boat route in Port Houghton.
2) Unit is located in a LUD III area where timber production must coexist or be subordinate with other with other uses.
3) Provide vertical and cavity nesting habitat structure within managed stands where logging systems are feasible.
4) Moderate timber volume and value productivity.

RATIONALE FOR ALTERNATIVE SELECTION

Group Selection: Create one to two acre openings removing all trees. Retain areas of green cull and snags when found and designate for long term retention within the unit. Openings should fit the landscape which in this case is near flat to gentle slope. In areas adjacent to Class III streams use the streams as boundaries for some openings. Do not cross a stream with an opening unless multiple forks are involved, then use the largest fork as a boundary. Leave Sitka spruce and Yellow cedar on the edge of the openings when found in the area. Avoid leaving trees infected with dwarf mistletoe on the edge of the openings. This scheme will require 4 to 5 entries over 100 years where almost all the timber will be removed from these areas. During the ensuing entries it will be possible to designate patches of reserve trees or reserve areas. These areas should have a significant amount of snags, green culls, young timber or natural thrifty reproduction. This prescription will provide long term vertical habitat, and mitigate visual impacts. Operate as a working hypothesis. Monitor this approach and modify if needed. Recognize that windthrow is a major concern and consideration.

INTEGRATED MANAGEMENT PRESCRIPTION

Description of Unit Boundary Determination:

Bonded by Unit 398127 and the 400 foot elevation level to the north. Bounded by Unit 398130 to the east. Bounded by the 1200 to 1400 foot elevation level to the south and a major ridge to the west. Tie individual units to windfirm boundaries where feasible, utliizing low site and muskeg transitions.

Soil, Water, and Wildlife Conservation:

BMP 13.16: Light harvest and Helicopter system will soften impacts on soil and water in the relatively large unit.
BMP 18.1: Habitat structure maintained.

Forest Productivity Activities:

Openings will warm soils and provide natural regeneration.

MONITORING PLAN

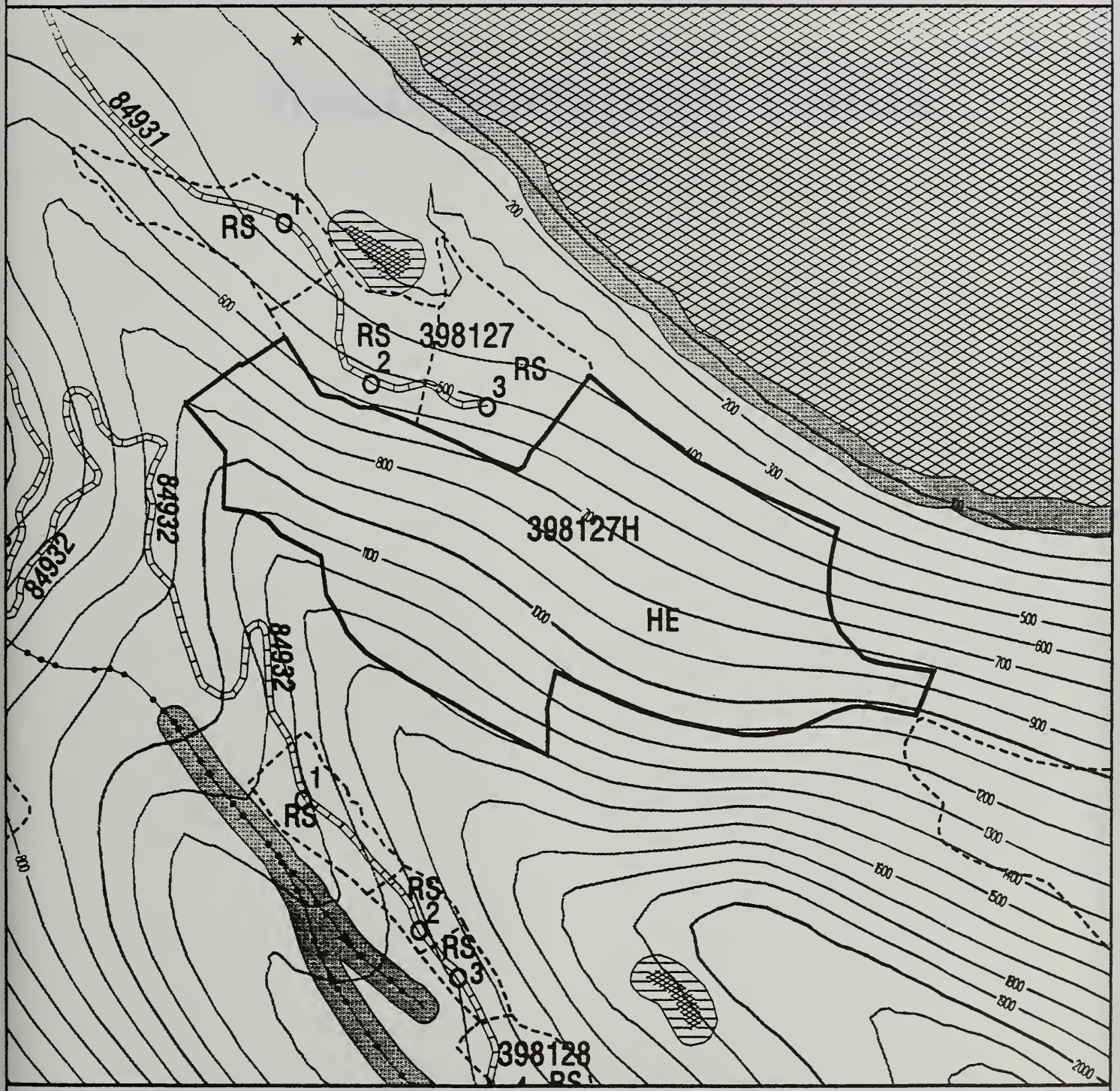
Year	Activity	Standard	Who
1	Unit accept.and completion of erosion control	TS Contract	Sale Admin
1	Stocking svy.& reserve tree assess.	Silvi Rx	Silviculturist
3	Stocking svy.	>150 trees/acre, well-distributed	Silviculturist
5	Stocking svy. and reforestation certification	>150 trees/acre, well-dist., free to grow	Silviculturist

PORT HOUGHTON / CAPE FANSHAW FIELD UNIT CARD

VCU: 79 UNIT(S): 398127H ALTERNATIVE(S): D

ACRES: 150.89 TOTAL NET MBF: 4820.8 QUAD(S): SUMB4 QUARTER QUAD(S): SE

PHOTO INFO: YEAR: 1987 FLIGHT LINE: 57 ROLL NO.: 1184 PRINT NO.: 145



EXISTING ROAD
PROPOSED ROAD
PROPOSED TEMP ROAD
UNIT BOUNDARY
ADJACENT UNIT
SETTING BOUNDARY
CONTOUR LINE
OWNERSHIP BOUNDARY
CLASS 1 STREAM
CLASS 2 STREAM
CLASS 3 STREAM

LOGGING SYSTEM CODES:
HE = HELICOPTER SV = SHOVEL
SL = SLACK LINE G = GRAVITY RETURN
H = HIGH LEAD
RS = RUNNING SKYLINE
SSL = SMALL SLACK LINE

ROAD BEGINS / ENDS
1 LANDING & NUMBER
EAGLE TREE
STREAM FLOW

STREAM BUFFER
SALTWATER
LAKES
LAKE PROTECTION ZONE

CONTOUR INTERVAL 100 FEET
SCALE 1:12000 1 INCH = 1000 FEET

0 1000 2000 3000 FEET

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Appendix B

Road Summary Cards

Appendix B

Port Houghton/Cape Fanshaw EIS Road Summary Form

Description of Data Fields and Comments on Use

The road summary cards were developed from the Logging System and Transportation Plan for this project and the road design cards completed by resource discipline leaders.

The road numbers may change between the Chatham and Stikine Areas even if the road, itself, is unchanged.

Resource boxes describe the specific concerns identified by each task leader.

Provided below is a description of each of the data fields with acronyms.

Alternative: Identifies each of the alternatives that the road occurs within along with the road miles within alternative and associated VCU.

Road Status: P = Proposed

Service Life:
L = Long term--service life at least 10 years
S = Short term--service life less than 10 years
I = Intermittent--closed/open to traffic as required
T = Temporary--required only for 1-2 years for logging access, and not for subsequent management activities

Functional Class:
C = Collector Road
L = Local Road

Post Harvest Maintenance Level

1 = Road closed more than 1 year; drainage maintained
2 = Road maintained for minor use by high clearance vehicles

Maps are located at the end of this appendix.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 6122 (see Maps 2 and 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C						
	84	0.20	P	INTERMITTENT	L	1
	89	4.07	P	LONG - TERM	L	2
Total Miles		4.27				
E						
	890	2.11	P	LONG - TERM	L	1

Roads: Generally easy construction on sideslopes of 25-35%. Maximum adverse grade of 8%, favorable 12%. No full bench/end haul required. Road deviates from paper plan from station 145+00 onwards to keep road below a series of large V-notches located between Units 29130 - 29131. Two switchbacks, both 55' radius, are needed to access Unit 29130.

Soils: No concerns.

Fisheries/Hydrology: Road crossing Class III stream (see original map) should be Class II. Provide for fish passage on all Class I and II streams.

Wildlife: No goshawk nest found in unit. Goshawks likely nesting in project area SW of unit where no roads or units are located.

Visuals/Recreation: VQO: Modification/Maximum Modification. Easy construction, no major concerns. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD

ROAD 6130 (see Map 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	86	0.50	P	LONG - TERM	C	2
	87	3.47	P	LONG - TERM	C	2
	89	0.96	P	LONG - TERM	C	2
Total Miles		4.93				
C						
	86	1.26	P	LONG - TERM	C	2
	87	2.46	P	LONG - TERM	C	2
Total Miles		3.72				
D						
	86	1.26	P	LONG - TERM	C	2
	87	3.47	P	LONG - TERM	C	2
	89	0.96	P	LONG - TERM	C	2
Total Miles		5.68				
E						
	86	1.26	P	LONG - TERM	C	2
	87	3.47	P	LONG - TERM	C	2
	89	0.96	P	LONG - TERM	C	2
Total Miles		5.68				

Roads: Generally straightforward construction on moderate (≤40%) side slopes and benches. Rolling grades with maximum favorable 10%, maximum adverse 8% <50'; end haul const. 3 major fish stream crossings: station 20+00, 54+70 and station 105+00. One major (~17') through cut. Many Class III streams requiring culverts and incidental cuts/fills ≤10'. This road presents no road construction difficulties. Several Class III V-notches were crossed. Possible rock pits were observed at station 142.5, 173.9, 175.23, 212.2, and 241.0.

Soils: No concerns.

Fisheries/Hydrology: Consider bridges for all Class II crossings; stream gradient at these crossings is minimal, although crossings outside units 27105, and 27102 are subject to heavy peak flow. The crossings outside of Units 27105 and 27102 also appear to be subject to heavy peak flows. The crossings in Units 27107, 27109, and 27110 are Class III crossings; the crossing in 27109 is a steep v-notch. Provide fish passage on Class I and II streams. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: Road crosses potential mountain goat travel corridor in vicinity of Units 27101 and 27102. Minimize construction disturbance.

Visuals/Recreation: VQO: Maximum modification. Most of road not seen. Partial retention. Viewed from background at 8± miles. Should meet VQO unless fills for culverts or rockpit openings face view, are massive, and light colored.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 6131 (see Map 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	87	0.08	P	LONG - TERM	L	1
C						
	87	0.07	P	INTERMITTENT	L	1
D						
	87	0.87	P	LONG - TERM	L	1
E						
	87	0.08	P	LONG - TERM	L	1

Roads: Road 6131 is 1.95 miles long, shortened by relocating the beginning which now joins 6130 at station 85+22. 6131 proceeds generally east at 8% adverse grade across a proposed low-water crossing in dry wash at 5+00, then turns south easterly to a major crossing at 13+00 (proposed 60' modular span with concrete abutments). 6131 then curves to southwest on favorable 4-6% grades for 10 stations, then 10% favorable to 27103-1, 4% adverse to get Temporary Road 27103-2, 5% favorable through 27103. Alignment controls past outlet of lake; grades roll ±10 and ±4 past lake into 27112. Favorable 4-7% grades around rockface in 27112, then adverse 12% to end of system road at 103+00, rock sources 49+00 to 51+60 (~20,000 cy) and 84+00 - 90+30 (~133,000 cy).

Soils: No concerns.

Fisheries/Hydrology: One Class I stream crossing remains after road has been moved; bridge is fine for this crossing.

Wildlife: Road crosses potential mountain goat travel corridor. Minimize disturbance related to road construction. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8449 (see Map 4)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	81	0.89	P	SHORT - TERM	L	1

Roads: Road 8449 leaves Goldbelt, Inc. system at a point of maximum elevaton and proceeds easterly at 15% favorable grades across moderately steep sidehills through an existing clearcut into Forest Service land at station 19+25. Grade moderates to -10% and -6% around a curve left into landing 1. Swampy conditions at landing will require fill/ballast. Rock is probable from stations 7+99 to 18+00. No streams encountered. Borrow source above stations 25-27.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Road crosses potentially suitable mountain goat habitat (winter range).

Visuals/Recreation: VQO not documented. Road connects to existing road on Goldbelt, Inc. land. Road unlikely to alter existing visual condition (clearcut).

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8460 (see Map 4)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	81	3.56	P	INTERMITTENT	L	2

Roads: Road 8460 leaves the Goldbelt, Inc. land approximately 3,000 ft north of 8460/8461 junction on stiff 15% favorable grade. Forest Service boundary at 126+32. At junction 8461, 8460 turns NW across muskegs on generally slight adverse rolling grades to first stream crossing, then SE to SW on generally rolling grades below muskegs on east side of major ridge to junction of 84601. 8460 pitches sharply up (-12%) through saddle and turns northwest through Unit 311141 on rolling ±7% grades to crossing at head of major valley. 8460 then turns generally southeast through scrub and muskeg to junction 84603 at station 216+58. 8460 then turns to east side of timbered ridge on 8-10% adverse grades to end of road at 238+60. Major relocation from plan at two major drainages to avoid V-notches (Stations 58+40, 166+73).

Soils: No concerns.

Fisheries/Hydrology: Streams have been reclassified Class III. No concerns. Road relocated to avoid major V-notches and unstable slopes. No concerns.

Wildlife: Road may cross potential mountain goat travel corridor. May isolate habitat to southwest.

Visuals/Recreation: Most of road is not seen except for discrete locations on the small boat route. Foreground trees will be screened at hill top crossing between -42 and -141. VQO: Modification Road should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8461 (see Map 4)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	81	0.88	P	INTERMITTENT	L	1

Roads: Final location resulted generally in light balanced design construction over moderately sloping terrain supplemented by end-dump design in low and marshy areas and across drainages. Substantial deviation from paper plan was made necessary to avoid sensitive soils on steep slopes. Approximately 9,600 ft. of field located road was abandoned (but not destroyed) as a result of economic analysis of construction conditions and logging systems.

Soils: From elevation 1,950 to 2,250. Opposite side of the ridge from Unit 311131. Portion of this section of road crosses through an area originally mapped as Class IV soil stability. After field investigation this area was re-classified to Class III soil stability. There are a series of ridges that the road crosses while climbing the hill; however, the swales seem stable and the convex ridges are moderately to well drained. Surface water management is particularly important in this segment of road. Culverts should be placed in the swales, and grade breaks built into the running surface. Suggest using a slight adverse grade on the road between the culvert and the crest of each convex ridge to divert surface water off of the road. Also suggest that this section of road be built without a ditch, and that log haul be limited to summer haul only.

Fisheries/Hydrology: Road was relocated to avoid stream crossings and poor soil conditions. No concerns.

Wildlife: Road may cross potential mountain goat travel corridor. May isolate goat habitat to the southwest.

Visuals/Recreation: VQO: modification seen in background from small boat route, far background from ferry route. Road realigned to eliminate switchback between Unit 311144 and road east of 311144 will not be seen due to topography and remaining trees. Unit cut and fill slopes between 0+00 and Unit 311144 to meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8489 (see Map 4)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	80	0.56	P	SHORT - TERM	L	1
C						
	80	0.56	P	SHORT - TERM	L	1

Roads: Grades on the 8489 range +4 to +18%. Road starts on Goldbelt, Inc. land. The first rock pit site is at 14+50 to 16+00. Most of the route requires hoe construction and no bridges are planned. Expect 2-72" corrugated metal pipes to be pulled after logging.

Soils: No concerns.

Fisheries/Hydrology: Road crosses Class II east of 311133 - grade 22%. Crosses Class II downstream of confluence at main streams. No concerns.

Wildlife: Road passes through suitable habitat for Vancouver Canada Goose.

Visuals/Recreation: VQO: Modification. Seen only from discrete locations from small boat route in background and far background from ferry. Tucked into topography, should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8490 (see Maps 3 and 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	84	0.56	P	INTERMITTENT	C	1
C						
	84	1.46	P	LONG - TERM	C	2
D						
	84	1.46	P	INTERMITTENT	C	2
E						
	84	3.96	P	LONG - TERM	C	2
	84	3.49	P	INTERMITTENT	L	2
Total Miles		7.45				

Roads: **Segment 1**: Road is generally easy midslope construction, however approx. 0.5 mile of moderately difficult construction across V-notches between stations 322 to 345. Side slopes range from 10% on river flats to 35-45% on midslope roads. 28 stations of full bench/end haul (on sideslopes of 55-70%). Maximum adverse of 12% (2 pitches for 9 stations + 13 stations). Maximum favorable grade of 18% required for 1200'. 4 bridges needed (approximately 35' span @ station 229+15; approximately 80' span @ station 263+60; approximately 70' span @ station 295+50 and approximately 35' span @ station 297+10). 2 switchbacks of 70' & 55" radius. Road deviates from paper plan to reduce bridge span on Sandborn River and reduce road length. Recommend a hydrologic analysis following final location to determine drainage structure and size.
Segment 2: The main drainage structures are required; arch pipe at station 61+89 (approximately 10'); culverts at stations 173+40 (approximately 6') and 174+85 (approximately. 6'). Road section contains 2 switchbacks each with a radius of 75'. There is approximately 900 feet of adverse grade (12%) between the switchbacks. End haul construction is required between stations 158+00 and 171+00. Paper plan altered due to slide on west side of Unit 341103.

Soils: For the section of road 8490 that occurs within Unit 341116: The lower leg and the switchback are well located, and there doesn't appear to be any problems. From the switchback the road passes through an area that has been dissected by many small drainages. Recommend that the road be built in a manner that will minimize the impact. Suggest minimum cuts and fills, sacrifice alignment and let the road fit the landform. Culverts should be laid to channel gradient, so that stream velocities will not change. Pipe collers and anchors may be needed to keep the pipes in place and prevent piping along the outside of the pipe. Suggest using large angular rock for subbase for the fill, which could also act as a French drain. It will be very difficult if not impossible to achieve any degree of compaction with the native materials. Rolling into and out of these drainages will help to reduce the risk of road failures. Also the road width should be kept to a minimum and yet be safe.
An area in question is between stations 140+00 and 145+00. Forest Service staff were concerned about soil stability. This is a legitimate concern, because the road location crosses through some very wet boggy ground. The wetness problems start before getting into the first switchback on fairly steep slopes. Following on down past the 2nd switch back (lower segment of road) the stream channel is very stable, and the soils to either side of the channel are stable. This section is the key to the stability for the land above. Backing up from the lower leg of this road, the road is on well drained soils up to station 145+00. Road design crossing the bog must provide for the free flow of both ground water and surface water. The upper switchback is also very wet, somewhat poorly to poorly drained soils on gentle slopes (less than 30%). Surface water management and free flow of ground water need special attention in road design. Suggest that construction work be limited to the drier seasons of the year and that no blasting be done to construct the upper leg of this road above the switchbacks.

Fisheries/Hydrology: Crossing near Unit 341107 is Class II placid-flow stream, clogged with algae and subject to flooding. Intensive survey done near crossing. Road 8490 crosses Class I streams on SE and SW corners of Unit 341113. Care must be taken to minimize sedimentation at crossings since they intersect prime spawning areas. Multiple crossings of road 8490 occur in Unit 341113 along Class I salmon creek. Bridges are required at crossings due to span width and most importantly to preserve prime spawning areas under crossings.

Wildlife: Northeast end of road is on edge of mountain goat range.Avoid flight paths in mountain goat kidding habitat from mid May through June.

Visuals/Recreation: Not seen from 0+00 to stream. Potentially seen in midground from stream east. VQO: Modification. Road west of hill likely not seen because of low elevation and foreground trees. Road crosses hill. Switchback to 105, tucked in topography, mostly hidden from view. 18' heights. Cuts @ Unit 341106 viewed in midground from Sandborn Canal. Rock likely dark-colored shale. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8493 (see Map 5)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	79	2.82	P	INTERMITTENT	L	2

Roads: Generally difficult construction involving blasting through rock bluffs (numerous) on steep side slopes to gain moderate benches and a crossing point of major cliff band @ station 107+00. Length 15,018', 3,308' full bench construction = (2,404' end haul). Grades: 15% favorable to 8% adverse. Switchbacks: 80' @ 8%, 75' @ ±2%, 70' @ ±2%.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8494 (see Maps 2, 3, and 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	3.98	P	LONG - TERM	C	2
	84	0.26	P	LONG - TERM	C	1
	84	0.08	P	LONG - TERM	L	1
	89	0.50	P	LONG - TERM	L	1
Total Miles		4.83				
C						
	83	3.67	P	LONG - TERM	C	2
	84	0.26	P	LONG - TERM	C	2
	84	0.08	P	LONG - TERM	L	2
	89	1.23	P	LONG - TERM	L	2
Total Miles		5.24				
D						
	83	3.98	P	LONG - TERM	C	2
	84	0.08	P	LONG - TERM	L	2
	84	0.26	P	LONG - TERM	C	2
	89	0.49	P	LONG - TERM	L	2
Total Miles		4.82				
E						
	83	4.00	P	LONG - TERM	C	2
	84	0.26	P	LONG - TERM	C	2
	84	0.08	P	LONG - TERM	L	2
	89	1.23	P	LONG - TERM	L	2
Total Miles		5.57				

Roads: **Segment 1**: Road generally easy construction on rolling topography. Sideslopes average 15-20%. Large stream crossing located at station 30+17. Rock pit inferred at station 62+40. Road deviates from paper plan to protect stream buffer.

Segment 2: Road is generally easy construction on rolling topography. Sideslopes are characteristically 20-30%. From station 267 to 277, requires full bench/end haul construction on steep sideslopes of 60-80%. Two major pitches (1700' & 1000') of adverse 12% required to bypass rock bluffs and steep sideslopes. Maximum favorable grade of 12%. 3 short spurs (total 8+50 station) access landings in Unit 333093 and 2 spurs (6 stations) of temporary road access Unit 33301. 2 switchbacks (80', 70') are needed to access units beyond 333093. Portions of road will be used as a continuous landing.

Soils: No concerns.

Fisheries/Hydrology: One Class I stream crossing. Crossings in 29124 (now combined with 29126) are Class III. Provide for fish passage at Class 1 and 2 crossings.

Wildlife: Avoid disturbance to nesting goshawks known to be in vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Visuals/Recreation: VQO: Modification/Maximum Modification. Road is generally on lower slopes and buffered by trees. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8495 (see Maps 1 and 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	82	3.90	P	LONG - TERM	C	2
	83	5.94	P	LONG - TERM	C	2
Total Miles		9.84				
C						
	82	5.95	P	LONG - TERM	C	2
	82	3.69	P	INTERMITTENT	L	2
	83	5.94	P	LONG - TERM	C	2
Total Miles		15.58				
D						
	82	4.99	P	LONG - TERM	C	2
	83	5.94	P	LONG - TERM	C	2
Total Miles		10.93				
E						
	82	0.52	P	LONG - TERM	C	2
	83	5.94	P	LONG - TERM	C	2
Total Miles		6.46				

Roads: **Segment 1**: Road section contains 3 major stream crossings at station 573+00, at 621+90, and at 591+10. There is a maximum sustained favorable grade of 15% for 9 stations. Possible rock quarry at station 744162. Road section contains 4 switchbacks. The switchback at 732+00 is 65 ft radius. The remaining switchbacks are 75 ft radius.
Segment 2: Locations follows gentle terrain with moderate grades. Two large stream crossings noted at stations 380+27 and 468+54. Road location was altered from paper plan to avoid encroachment on goshawk tree located 950 feet north of station 487+60. Potential rock quarry at 505+55.
Segment 3: Fairly heavy balanced design construction indicated between stations 190 & 233 and between stations 300 & 310. Balance of segment is light balanced design construction augmented with rock fill borrow. Possible rock sources indicated near stations 194 and 262 (rock ledge requiring temporary adverse road). Identified fish habitats crossed at station 233+90, at station 262+42, and at station 324+64. Some 8% adverse grades between 190 & 233 and between 288 & 352 to access landing locations.
Segment 4: Location follows gentle terrain to station 190+00 (@ "Twin Pond Saddle") with moderate grades and construction consisting of balanced design augmented with rock fill borrow. This segment has stream crossing over identified fish habitat at stations 133+28, 40+95, 59+13, and 60+70. Possible rock sources were observed as mounds occurring in muskeg areas between station 0+00 and station 35+00.

Soils: No concerns.

Fisheries/Hydrology: Crossing 1 at station 133+28 - No concerns. Crossing 2 at station 233+90. Crossing 3 at station 324+64 - No concerns. There is concern with the crossing at station 133+28. Station 324+64 - Consider moving downstream to point where stream channel is more stable and defined. Station 344+90 - No concerns.
Flagged road crossing near 332074; Class I fish habitat. Occasional small tributaries are in muskeg off of main channel. Crosses Class II stream @ station 133+28 - recommend bottomless crossing. Station 133+28 - Avoid damage to adjacent creek entering south bank of channel east of flagged crossing. Station 60+30 - Channel gradient = 8%, sideslopes ~30%, bedrock control without major sign of mass wasting in area. Recommend a hydraulic analysis following final location to determine drainage structure and size.

Wildlife: Road follows edge of mountain goat habitat. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Visuals/Recreation: VQO: Modification. Viewed in background from small boat route. Road in area gently tipped to viewer @ about 5% from shore to base of hill. Trees in foreground should screen road. Should meet VQO.
VQO: Partial Retention/Modification. Viewed in background and midground from small boat route and far background from ferry. Potential roadcuts on 8% slope should be less than 10' height unless topo anomalies. Should meet VQO. @ rock pits minimize height of excavated face and avoid locating in units where there are no trees to screen.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8496 (see Maps 2 and 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	5.07	P	LONG - TERM	C	2
	89	2.61	P	LONG - TERM	L	1
	89	1.44	P	LONG - TERM	C	2
Total Miles		9.12				
C						
	83	5.07	P	LONG - TERM	C	2
	89	0.21	P	INTERMITTENT	C	2
	89	2.95	P	LONG - TERM	L	2
Total Miles		8.24				
D						
	83	5.07	P	LONG - TERM	C	2
	89	2.25	P	LONG - TERM	L	2
	89	2.81	P	LONG - TERM	C	2
Total Miles		10.14				
E						
	83	5.07	P	LONG - TERM	C	2
	89	1.59	P	LONG - TERM	L	2
	89	1.44	P	LONG - TERM	C	2
Total Miles		8.11				

Roads: Segments 1, 2: The 8496 road provides efficient access with grades ranging from +1 to +8% & from -1 to -8%. Angled traverses in the buffer were required to maintain minimum standards for grade & alignment on the mainline.
Segment 3: The segment provides efficient access with grades ranging from +10 to -8%. Expect a good rock source 395+00 to 398+00. Two large crossings were noted. Several cuts over 15' are planned to maintain minimum alignment standards. Approximately 6 to 8 stations of end haul are expected.
Segment 4: The 8496 road provides efficient access with grades ranging from +8% to -8%. Anticipate good rock source 201+00 - 216+00. Two stream crossings were noted at 157+45 & 282+80. Known fish creeks were avoided & buffers were crossed as close to right angles as possible.

Soils: Between Units 29119 and 29120 the road has slopes that are in the 70-80% range and the bedrock is fine grained sandstone. Orientation of the bedding plane showed indications of mantle creep and large pieces moving downslope in stream channels. The cut bank may be difficult to hold because it will be high and there appears to be some colluvial movement. The distance between the benches at 29119 and 29120 is several hundred feet which, may set this up for a failure. End haul is advisable because of the very steep slopes. There is no indication that the soil material on the downslope would be able to support the load.

Fisheries/Hydrology: One Class I crossing in 332050. One Class II crossing. The crossing west of 29117 is Class II; the crossing in the north section of 29119 is also Class II. The crossing in the center of 29119 is Class III; the crossings in 29120 and 29122 are steep (up to 80') V-notch Class III crossings. Two Class II road crossings occur north of Unit 333083. Two streams run approximately west to east. The southern stream provides moderate flows and limited upstream habitat, the northern stream moderate upstream habitat and significant water volumes to Class I and more Class II downstream. Creek channels here experience occasional to frequent flooding for short durations. Stream channels belong to floodplain or palustrine process groups. Recommend selecting alternate road crossing downstream (east) of two stream confluences to site with well established banks.

Wildlife: Protection zone of 330' radius surrounds adjacent bald eagle nests. Red-tailed hawk nest previously observed in Unit 29101 in early 1980s. No goshawks located near road. South end of road in suitable mountain goat habitat. Goshawks likely forage in area. Avoid disturbance to nesting goshawks known to be in vicinity. Prior to harvest, search for nest to ensure goshawk guidelines in effect are implemented.

Visuals/Recreation: Most of unit not seen except minor portions which are seen in far background from north arm of Farragut Bay. Road @ edge of clearing. VQO: Maximum Modification. Should meet VQO. VQO: Partial retention from landing to 332050, modification for remainder of road. Road well placed @ toe of slope. No concerns. Flat terrain and remaining trees will screen road. Rock pit faces should be oriented away from the view and screened with trees.

Cultural: Maintain 300 ft. buffer between road P-line and historic cabin.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8496 REVISION (see Map 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	89	2.65	P	LONG - TERM	C	2
C						
	89	1.91	P	LONG-TERM	C	2
	89	0.73	P	LONG-TERM	L	1
Total Miles		5.07				
D						
	89	0.73	P	LONG - TERM	C	2
E						
	89	2.65	P	LONG - TERM	C	2

Roads: Road is alternative route to bypass difficult crossing in original 8496 road: Total length 14,998' of straight-forward construction, ~half in muskeg. Grades: maximum 12% favorable, 8% adverse. Two major stream crossings at stations 14+90 and 86+25. Two switchbacks, 65' radius @ ±4%, 80' radius @ 6%.

Soils: No concerns.

Fisheries/Hydrology: Road crosses Class II at 85+ 25 channel 37' wide 5% grade. Road crosses Class II at 14+90 channel 30' wide, 10% grade, stable. No concerns if channels are not constricted. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8497 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	1.80	P	INTERMITTENT	L	1
C						
	83	1.17	P	INTERMITTENT	L	1
D						
	83	0.35	P	INTERMITTENT	L	1
E						
	83	1.17	P	INTERMITTENT	L	1

Roads: Road 8497 joins 8495 at station 191+40 west of a large saddle and climbs at rolling grades on edge of muskegs until it crosses the northeast side of the major ridge system. Once on the sidehill, 8497 climbs at 12% to a potential rock source at 25+00 - 33+00 where it slacks to 6-8%. Two switchbacks at 43+00 and 50+00 raise the road higher on the sidehill. Road climbs at 10% after switchbacks for about 1/4 mile before pitching to 13% to reach a stable point above an ancient block fault. The road then descends at 10% to reach favorable ground and landings near the ridgetop. There are no major stream crossings and two sections of end haul - 23+00 to 35+00 and 63+00 to 69+00. Potential quarry contains an estimated 60,000 cy. Road will not tie to Stikine side with this project.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Road may affect potential wildlife travel corridor in saddles at drainage divide and along ridgeline.

Visuals/Recreation: VQO: Maximum modification east of Unit 331049, remainder modification. Not seen between Units 332074 & 331049. Otherwise seen in the background from the ferry on the Stikine side or the small boat route on the Port Houghton side. Road follows topography, rock quarry low and long, dark colored rock should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8498 (see Maps 1 and 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	82	4.90	P	LONG - TERM	C	2
	82	1.99	P	INTERMITTENT	L	1
	86	0.05	P	LONG - TERM	L	2
Total Miles		6.94				
C						
	82	6.89	P	LONG - TERM	C	2
	86	0.05	P	LONG - TERM	C	2
Total Miles		6.94				
D						
	82	1.77	P	LONG - TERM	L	1
	82	1.99	P	LONG - TERM	C	2
	86	0.05	P	LONG - TERM	C	2
Total Miles		3.81				
E						
	82	1.99	P	LONG - TERM	C	2
	82	1.77	P	INTERMITTENT	L	1
	86	0.05	P	LONG - TERM	C	2
Total Miles		3.81				

Roads: Road is generally easy to construct except for 4.4 station of end haul (Δ 253 to 257.4). Waste site available on ridge ending at station 241. Road has two sections of maximum adverse grade (-12%): station 252 - 259 and 267 - 270 (total -10 station) Remainder of road from station 241 to stream at station 306 has grades from -4% to -8%. Possible rock pits noted at station 273+00, 278+00, 323+50.
Road is generally easy construction on rolling terrain. Four switchbacks at 7+00, 27+00, 87+00 and 116+00 are located on good benches. Switchback with 65' radius at staion 27+00 is required to minimize cuts and fills. Several rock quarries were identified at stations 65+00, 123+00, 127+00, 152+00 and 158+90. Three sections of maximum favorable grade (+12%) total 32 stations.

Soils: Road relocated. Now OK.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Maximum Modification, Modification, Partial Retention. Partial Retention area seen on Stikine side in far background from ferry 8± miles with observer far below (1000'). Should meet VQO.
VQO: partial retention, modification and maximum modification. Switchback has potential visual problem. Only middle of road will have cuts and these should not be significant. Overstory removal between switchbacks. Remaining regeneration (±30 ft. height) should buffer road construction. Otherwise should meet VQO. Rock pit in 013 should orient face south; leave fringe trees to buffer view from north.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8499 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	82	1.76	P	INTERMITTENT	L	1
C						
	82	1.76	P	INTERMITTENT	L	1
D						
	82	1.76	P	INTERMITTENT	L	1

Roads: Road is generally easy construction and midslope; sideslopes 25% - 45%. The road varies from the paper plan in that it is located higher on the slope; minimizing stream buffer crossings and V-notch disturbance. To reach desirable V-notch crossings and landing locations; approximately 7 station of ≈ 16% favorable, approximately 4 station of ≈ 15% favorable, and approximately 3 stations ≈ 13%, were utilized.

Soils: No concerns.

Fisheries/Hydrology: No concerns. Road has no fish creek crossings. All crossings are Class III.

Wildlife: No concerns.

Visuals/Recreation: VQO: Partial Retention (above elevation 400). Otherwise max mod. Viewed in the midground from small boat route. Road conforms to topography. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 44001 (see Map 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B	87	1.18	P	LONG - TERM	L	1
	89	1.17	P	LONG - TERM	L	1
Total Miles		2.35				
C	87	0.53	P	LONG-TERM	L	1
Total Miles		0.53				
D	87	1.18	P	LONG - TERM	L	1
	89	2.41	P	LONG - TERM	L	1
Total Miles		3.59				
E	87	1.71	P	LONG - TERM	L	1
	89	1.17	P	LONG - TERM	L	1
Total Miles		2.88				

Roads: Mostly easy construction on moderate grades, mostly under 12%, with approximately 10 stations 14-15%, one large fish stream crossing at stations 125+95. 3 stations full bench/end haul. Did not locate alternative route in NE since much longer road than required, and additional crossing(s) of fish buffer(s).

Soils: No concerns.

Fisheries/Hydrology: There are three Class II crossings outside 29121; all are low gradient streams. Provide fish passage on Class I and II streams.

Wildlife: Road follows potential mountain goat travel corridor for 1 1/4 mile SW from Road 6131. Recommend alternate access to this area if possible. Access might be possible with connection northeast to Road 8496.

Visuals/Recreation: Not seen.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 44002 (see Map 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	86	0.06	P	LONG - TERM	L	1
	87	0.25	P	LONG - TERM	L	1
Total Miles		0.31				
C						
	86	0.06	P	INTERMITTENT	L	1
	87	0.25	P	INTERMITTENT	L	1
Total Miles		0.31				
E						
	86	0.06	P	LONG - TERM	L	1
	87	0.25	P	LONG - TERM	L	1
Total Miles		0.31				

Roads: Simple road construction - rock quarry site at 1+50, no issues.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Partial Retention. Viewed in background from ferry route. Size and color of rock quarry site could be issue. Orient excavation face away from view.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 44003 (see Maps 1 and 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	86	0.73	P	LONG - TERM	L	1
C						
	86	0.73	P	INTERMITTENT	L	1
E						
	86	0.73	P	LONG - TERM	L	1

Roads: Road climbs through 2 switchbacks on gentle sideslopes crossing several small Class III streams in V-notches and gullies. One short section of 60%+ above bench in Unit 27108. - No major areas of concern. Road becomes 44002 after entering Unit 27108.

Soils: No concerns.

Fisheries/Hydrology: All crossings on this section of road are Class III; the west stream in Unit 26103 is a V notch stream.

Wildlife: No concerns.

Visuals/Recreation: VQO: Maximum modification/partial retention (above 1100 ft.). Road generally follows contour - should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 44050 (see Map 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C						
	89	0.82	P	LONG - TERM	L	1
E						
	89	0.82	P	LONG - TERM	L	1

Roads: Easy construction on sideslopes of generally 15-25%. Maximum adverse grade of 6% and favorable 5%. Road deviates from paper plan to reduce grades and follow edge of muskeg.

Soils: No concerns.

Fisheries/Hydrology: No concerns. One Class III crossing.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 61222 (see Map 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C						
	89	0.91	P	SHORT - TERM	L	1
E						
	89	0.91	P	SHORT - TERM	L	1

Roads: Generally easy construction on midslopes of 20-30% (but to 50%). Maximum adverse grade of 5%. A section of 15% favorable is required to locate the road on a bench and to skirt a slide. The switchback radius is 80', grade 2%. Segments of the road are to be used as a continuous landing.

Soils: No concerns.

Fisheries/Hydrology: Road crosses no streams.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84601(see Map 4)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	81	1.00	P	SHORT - TERM	L	1

Roads: 84601 leaves 8460 on gentle favorable grades, proceeding SE along the toe slope before turning westerly around the major ridge nose. Grades to 12% adverse are employed to avoid unneeded length above the muskeg through scrub timber before the road turns southeasterly and proceeds at 10% adverse to again round the ridge nose easterly at ±2% to Landing 311145-2. This segment was selected as system end of road because it has more potential for extension. No developable quarries were identified on the route but the 350-foot end haul section at 13+00 has landform characteristics which indicate rock may be present above the road location. Three potential borrow pits were identified above 23+00, 51+00, and the end of road. Wet, soft areas (especially 37+00 - 43+00) will require fill/rock.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: Visual quality objective: Modification, viewed in the midground from the small boat route. Road appears to conform to topography. Excessive cuts or fills with light colored rock would exceed VQO. Otherwise road would be enclosed by trees and meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84602 (see Map 4)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	81	0.43	P	SHORT - TERM	L	1

Roads: Road 84602 leaves 8460 at station 187+70 on 8460 line and climbs sharply (-15%) to a stream crossing at 6+00. Road then rolls to -10% favorable to sidehill at 10+00, continuing -10% to station 23+00. Changes to -5% favorable. Continues to Landing 31146-7, end system road. Temporary Road 311146-5 continues 572 feet to Landing-5 at -15% favorable grades. Stream at 7+45 reclassified from Class II to Class III by fisheries team. Minor end haul/rock-borrow source at 10+50 - 12+50 and at Landings 5+7. Future extension of 84602 will turn right at present end of road.

Soils: No concerns.

Fisheries/Hydrology: Stream was reclassified Class III. Bedrock banks stable. No concerns.

Wildlife: Road crosses marginal mountain goat habitat.

Visuals/Recreation: VQO: Modification at back of ridge and likely not seen.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84612 (see Map 4)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	81	0.85	P	SHORT - TERM	L	1

Roads: This route was initially planned as part of Route 8461 (which was rerouted because of steep rocky terrain and sensitive soil stability). It generally follows available benches with balanced design construction planned. One Class II stream is crossed at station 5+10. One V-notch is crossed at station 18+56 within Unit 311144 and is planned for split-yarding for a setting boundary between Landings No. 1 and No.2. Moderate grades are designed. No rock sources are apparent. Route in field remains marked as 84612.

Soils: This road is well located - most of the side slopes are thirty percent or less and the ground below is also gentle. There are some wet spots, but mass failures are not anticipated.

Fisheries/Hydrology: Road crosses no streams.

Wildlife: Road may cross potential mountain goat corridor. May isolate goat habitat to the southwest.

Visuals/Recreation: VQO: Modification seen in background from small boat route, far background from ferry route. Road realigned to eliminate switchback between Unit 311144. Road east of Unit 311144 will not be seen due to topography remaining trees. Limit cut and fill slopes between 0+00 and limit size of Unit 311144 to meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84891 (see Map 4)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	80	1.76	P	INTERMITTENT	L	1
C						
	80	1.76	P	SHORT - TERM	L	1
D						
	80	1.76	P	INTERMITTENT	L	1

Roads: Route changed from paper location to avoid sensitive soils on steep terrain and recent slide on north side of Class III stream. A potential rock source is located approximately mid-point enroute. Principal rock source may exist at end of planned route 848911. Route passes through areas of semi-saturated soils on moderate terrain.

Soils: Road rerouted to avoid sediment and slumping problems. Road placed in area of better drainage to reduce the risk of delivering significant sediments into the nearby stream. If a bridge is recommended, suggest that the piers be log crib, then line with filter cloth before being backfilled. Suggest placing the structure so that there will not be a porous area behind the approaches during high water. The stringers could be temporary so that after logging has been completed the bridge could be removed easily. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Fisheries/Hydrology: No fisheries concern. Road crosses Class II creek at best accessible location.

Wildlife: Road passes through suitable Vancouver Canada souse range. Road crosses edge of potential mountain goat range.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84902 (see Map 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E	84	0.58	P	SHORT - TERM	L	1

Roads: Straight forward construction on moderate side slopes. 2900' in length with 260' of full bench construction (80' end haul). Maximum grade 15%, no adverse. One switchback, 55' radius @ 7% grade.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84903 (see Map 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E	84	2.05	P	INTERMITTENT	L	1

Roads: Road is generally easy midslope construction following benches. Sideslopes are characteristically 25-35%. Between stations 59 and 63 full bench/end haul required on 60-80% slopes. Maximum adverse of 2% and, favorable 18% (pitch of 1300' between stations 85 and 98). Maximum favorable grade needed to access Unit 341110.

Soils: This road is dissected by some very deep, very steep stream channels - Also there is a recent (last year) sluice out that the road will have to cross. The location of this road is O.K. as marked, but there will be problems getting across some of these streams in the southside of Sandborn Canal. Then, as the road climbs, concerns should be addressed on the slope on the north side of Sandborn Canal. The first switchback occurs slightly east of a recent debris torrent channel, the bedrock exposed in this sluice out is shist. Climbing from the switchback-numerous drainages are encountered. Recommend that the road dip into and back out of these channels and that frequent grade breaks be used to spread surface water. Recommend that all cuts be as small as possible, and that the excess material be end hauled.

Fisheries/Hydrology: Road 84903 crosses a fishless Class III stream near the center of unit. Although the road crosses at marginal Class II fish habitat, this section is flanked by high opponent falls and cascade pocketwater habitats. Minimal fisheries concerns. Road crosses Class 3 stream in a relatively low gradient section. Banks are predominantly composed of bedrock with sideslopes of < 30%. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84905 (see Maps 3 and 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E	84	0.31	P	SHORT - TERM	L	1

Roads: Moderately difficult midslope construction on sideslopes of generally 40-50%. Maximum favorable grade of 12%. Between station 4+00 and station 10+55 road crosses 3 major V-notches.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Road crosses marginal mountain goat habitat. Try to minimize construction impacts. Avoid flight paths in mountain goat kidding habitat from mid May through June.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84909 (see Map 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E	84	0.44	P	SHORT - TERM	L	1

Roads: Easy construction on sideslopes of generally 15-25%. Maximum adverse grade of 6% and favorable of 4%. No full bench/end haul needed. One large crossing at station 3+10.

Soils: No concerns.

Fisheries/Hydrology: Road crosses Class II stream on solid banks. Bridge planned. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84931 (see Map 5)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	79	1.01	P	INTERMITTENT	L	1

Roads: Road climbs through rock bluffs (difficult construction = blasting required) to gain major canyon system leading to benches in Unit 398127. Total length 4690' specified road. Full bench 1240' (590' end haul). Maximum grades: 15% favorable, 12% adverse. Maximum fill 15' (confined).

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: Road that passes through Unit 298127 is on a bench and would not be seen. From intersection to road, road would be apparent in the middleground from the small boat route. In this area, road construction will result in maximum modification exceeding VQO. Mitigation potential limited.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84932 (see Map 5)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	79	2.01	P	INTERMITTENT	L	2

Roads: Majority of road is on steep, rocky sidehill with bluffs requiring extensive blasting. Much full bench construction (3214' of end haul) with little common material. Final 35 stations are mostly easy construction. 3 large stream crossings identified. Switchbacks *3: 60' radius @ 8%, 65' radius @ 5%, 100' @ 10%. Maximum grades: 15% sustained favorable, 12% adverse (pitch 15% - 200'). Road passes obliquely through stream/lake buffer at maximum grade (15%) to gain terraces above crossing. Spur intersects mainline at new field modified location. Total length 127+00 station.

Soils: No concerns.

Fisheries/Hydrology: This road crosses a narrow Class II stream on a low gradient south of Unit 398128 - no concerns if integrity of banks is maintained. Another crossing outside Unit 398126 is on higher gradient Class III. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Viewed in middleground from small boat route. Steep slopes require large cuts to build road benches at several locations. Road will be in contrast to natural lines and color. Road construction will result in maximum modification exceeding VQO. Mitigation potential limited. Recommend consideration of helicopter logging.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84933 (see Map 5)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	79	1.32	P	SHORT - TERM	L	1

Roads: 6362' of specified road, mainly straightforward construction except middle section of difficult construction where road climbs through rock bluffs (<800' end haul): Grades 15% favorable to 6% adverse (400'). Two switchbacks: 55' radius @ 8%, 75' radius @ 10% favorable. Large stream crossing @ station 62+20. North approach intrudes into stream buffer as confined between rising land and stream meander.

Soils: No concerns.

Fisheries/Hydrology: Road crosses a Class III stream at section 2389, Class II crossing on station 6220 is good fish habitat. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Seen in the middleground from the small boat route, some sections may be tucked into topography and not seen. Steep slopes likely to require large cuts at several locations. Road construction will result in maximum modification exceeding VQO. Mitigation potential limited. Consider helicopter or dropping units severed by this road.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84934 (see Maps 3 and 5)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	79	2.67	P	INTERMITTENT	L	1
	84	1.13	P	INTERMITTENT	L	1
Total Miles		3.80				
C						
	79	2.67	P	INTERMITTENT	L	2
	84	1.08	P	INTERMITTENT	L	2
Total Miles		3.75				

Roads: 84934 efficiently accesses a mix of broken ground with large bluff. Rock work has been minimized. Complex construction using both hoe & drill is required. Grades range from +18% to -10%. Rock pit opportunities are abundant. Expect 10 stations of end haul (total of segments). Four switchbacks are planned.

Soils: No concerns.

Fisheries/Hydrology: Road crosses Class 2 (fishless) creek at two points below Unit #398121. Road crossings occur on creek sections with a gradient of less than 10%. Bankslopes are composed predominantly of boulder and bedrock at 30%. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Seen in the middleground from the small boat route. Some sections may be tucked into topography and not seen. Steep slopes likely to require large cuts at several locations. Road construction will result in maximum modification exceeding VQO. Mitigation potential limited. Recommend consideration of helicopter or dropping units served by this road.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84935 (see Map 5)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	84	0.37	P	SHORT - TERM	L	1
C						
	84	0.37	P	SHORT - TERM	L	1

Roads: This road is all easy construction. Nearly the entire road is at a grade of 12% favorable. There is no full bench, no major crossings, no endhaul and no areas for possible rockpits were found. Total distance of road is 19+26 station.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84937 (see Map 5)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	79	0.20	P	INTERMITTENT	L	1
C						
	79	0.20	P	SHORT - TERM	L	1

Roads: Generaly moderate rolling grades with simple construction. Some rock to be shot. One potential rock pit.

Soils: No concerns.

Fisheries/Hydrology: This road crosses one Class II stream with marginal fish habitat. Moderate stream grades.

Wildlife: No concerns.

Visuals/Recreation: Cut and fill for road construction likely to create significant visual change. Consider deleting unit or helicopter logging. Road cut may impact recreation.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84941 (see maps 3 and 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C						
	83	0.39	P	INTERMITTENT	C	2
E						
	83	0.69	P	INTERMITTENT	L	1
	84	1.48	P	LONG - TERM	L	2
Total Miles		2.17				

Roads: Road accesses units in watersheds 333 and 341. Road located with easy hoe/end dump construction. No grades over 12% favorable. Rock pit locations at station 45+00. Possible rock pit exists ~500' NE of station 68+00 could be accessed with a spur. Maximum fill 18'. No switchbacks. Total station of end haul = 3+50. North portion of road modified to minimize construction costs. South portion of road modified to access Landing 341098-1 because Unit 34106 was dropped.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Road may affect potential wildlife corridor through saddle of range.

Visuals/Recreation: VQO: Modification. Viewed in midground from -090 to Unit -099 from Sandborn Canal. Otherwise not seen. Sections located on benches and behind topo will meet VQO. Exposed road cuts between -098 to 099 could result in maximum modification exceeding VQO. Limit cuts and fills.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84950 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
D	83	0.52	P	SHORT - TERM	L	1

Roads: Grades not over 8% except for 2 stations of 15% favorable. Simple hoe/end-dump construction.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84951 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	0.32	P	SHORT - TERM	L	1
C						
	83	0.32	P	INTERMITTENT	L	1
D						
	83	0.98	P	INTERMITTENT	L	1
E						
	83	0.98	P	INTERMITTENT	L	1

Roads: Allowed grade tolerances facilitated modification of location and reduction of planned length from 1.26 to 0.94 miles (See road card for 332061. Recorded as system road.). The resulting advantage reduces the hauling distance from Unit 332060. Construction is light consisting mainly of end-dumping. No sources of rock are apparent.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Viewed background from small boat route. 5% slope @ shoreline. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84952 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	1.52	P	INTERMITTENT	L	1
C						
	83	1.52	P	INTERMITTENT	L	1
D						
	83	1.52	P	INTERMITTENT	L	1
E						
	83	1.52	P	INTERMITTENT	L	1

Roads: 84952 road was extended to access 332072. This action eliminates significant adverse while shortening the haul for this unit. No pit sites where located on the road until reaching the ridge top. Grades range from -2 - +15%. Expect 3 stations of end haul. Hoe & drill work are expected on the upper portions. Landing 332070-1 requires a 15' cut. This material will be used to elevate the spur.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Viewed in the background from the small boat route. Road @ edge of unit, below ridgeline and requires minimum cut and fill. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84953 (see Maps 1 and 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	0.87	P	SHORT - TERM	L	1
D						
	83	0.44	P	INTERMITTENT	L	1
E						
	83	0.87	P	SHORT - TERM	L	1

Roads: Location takes advantage of numerous benches high on NE side of a prominent ridge. Construction generally light balanced design supplemented by end-dumping rock fill borrow in low areas, marshy segments and drainage crossings. Planned grades do not exceed 10% adverse and favorable. No rock sources were observed.
Location advantages benches and gentle terrain to enhance balanced design construction and facilitate landing chances for present and future logging plans. No rock sources indicated on or near location. Two temporary roads are located to additional landing sites to facilitate skyline carriage clearance across a series of benches. Some adverse grades to 12% are designed and located to enhance alignment and construction.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Road viewed in the midground from the small boat route. If road is level, w/minimal cut and fills, could meet VQO. Viewed in background from small boat route. Road fairly level on below ridgeline. Marginal cuts and fills except on @ south side which faces south away from VQO. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84954 (see Maps 1 and 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	1.17	P	SHORT - TERM	L	1
D						
	83	1.17	P	INTERMITTENT	L	1
E						
	83	1.93	P	INTERMITTENT	L	2

Roads: Location largely on flats and benches with light balanced design and/or end-dump construction. No apparent rock sources encountered. Two streams of known fish habitat crossed, one at station 19+02 and at station 25+30. Location terminated in Unit 332065 because expected cost of extension to additional units exceeded estimated cost of helicopter logging.

Soils: No concerns.

Fisheries/Hydrology: Road location crosses two Class II streams perpendicularly with fish habitat. No V-notches crossed. Otherwise road located outside stream buffers. Road crosses third additional Class II stream; resident fish seen near crossing above the barriers located below. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: Road within 1/2 mile of bald eagle nest tree. Road location terminated in Unit 332065 approx. 1/2 mile from identified eagle nest tree.

Visuals/Recreation: VQO: Modification (between Units 68 & 65 & mid 45 to intersection) otherwise partial retention. Road designed should meet VQO. Road located on flats and benches avoiding heavy construction (sidehill cuts), to mitigate prefield concern.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84955 (see Maps 1 and 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	82	1.40	P	INTERMITTENT	L	1
C						
	82	1.40	P	INTERMITTENT	L	1
D						
	82	1.40	P	INTERMITTENT	L	1
E						
	82	1.40	P	INTERMITTENT	L	1

Roads: Road is generally easy construction, with both midslope and ridgetop location. Road grades are favorable, ranging from 5% to 14%. Road contains two switchbacks, located at station 0+00 and station 29+22. Road alignment is generally fair. Road varies from the paper plan in that two of the ridgetop switchbacks were eliminated, as well as the Class I stream crossing.

Soils: No concerns.

Fisheries/Hydrology: Road location altered to avoid stream crossing.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Viewed in background from small boat route except @ center road located @ edge of unit. Cuts and fills less than 9' height. Silviculture prescription for unit is to retain green culls and snags which should minimize impact. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84956 (see Maps 1 and 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B	82	2.32	P	INTERMITTENT	L	2
C	82	1.13	P	INTERMITTENT	L	1
D	82	2.32	P	INTERMITTENT	L	2
E	82	2.32	P	INTERMITTENT	L	2

Roads: Road is midslope in location and is generally easy construction. Road grades range from 12% adverse to 12% favorable. Road alignment is fair. There is a Class II stream crossing at Station 81+07. Suggest removal of crossings at stations 121+36 and 134+00, upon completion of harvest activities, due to their location in debris/snow chutes. Road varies from paper plan in that the crossing at station 81+07 was moved due to steep slopes, the road was extended into Unit 322044, and the crossing at the main creek was eliminated due to fish habitat concerns. Recommend a hydrologic analysis following final location to determine drainage structures and size.

Soils: No concerns.

Fisheries/Hydrology: Road crosses Class II creek on north boundary of Unit 322042. Location okay. Provide fish passage on all Class I and II streams.

Wildlife: No concerns.

Visuals/Recreation: VOQ: Max Mod/Mod. Viewed in far background. No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84957 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C						
	82	0.77	P	INTERMITTENT	L	1
D						
	82	0.77	P	SHORT - TERM	L	1

Roads: Road 84957 accesses Unit 322031. It is 44+60 stations in length with 2 stations of 12% adverse. All other grades ≤10% adverse. Gentle side slopes, hoe/end dump construction. A 240' spur heads NE from 37+18 to Landing #2. 84957 begins at 364+52 of Road 8495.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Partial Retention/Modification. Road is on level ground. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84961 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	1.93	P	INTERMITTENT	L	2
	83	1.86	P	INTERMITTENT	C	1
Total Miles		3.79				
C						
	83	1.28	P	INTERMITTENT	C	2
D						
	83	1.93	P	INTERMITTENT	L	2
	83	1.86	P	INTERMITTENT	C	1
Total Miles		3.79				
E						
	83	1.86	P	INTERMITTENT	C	2
	83	1.93	P	INTERMITTENT	L	1
Total Miles		3.79				

Roads: Grades range from -3 to +15%. Roads 849611, 84915 & 3 "T" spurs are accessed. Expect rock to be found at 333083-2, 3 & 4. Rock is available along the road in 333084. Majority of route is simple hoe and end dump construction. Drill work is required in 333084.

Soils: No concerns.

Fisheries/Hydrology: Stream section lowered to Class III due to large falls occurring down stream.

Wildlife: Road may affect potential wildlife travel corridor through saddle on ridge.

Visuals/Recreation: Road not seen for most of distance. Viewed from small boat route through Unit 333081. Unit is oblique to view and if road is designed to minimize cut and fill, road should meet VQO of Modification.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84962 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
D						
	83	0.61	P	SHORT - TERM	L	1
E						
	83	0.61	P	SHORT - TERM	L	1

Roads: Road 84962 recorded erroneously as Temporary Road 332054. All field markings refer to Temporary Road 332054. Road leaves 8496 at station 95+50 and proceeds northerly across scrubby flats on generally adverse rolling grades (±5%) to a stream crossing at 7+65, thence at favorable rolling grades to 8% to the toeslope at 11+00. Road follows toeslope + benches on ±5-10% grades to junction of Temporary Road 332054-2 (station 23+93). Road then turns NE across scrubby flat on rolling ±8% grades to Landing 332045-3, length 33+45. Possible rock source at 0+50 - 1+50 on Temporary Road 332054-2.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: Background, VQO: Modification.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84963 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E	83	0.90	P	INTERMITTENT	L	1

Roads: Road is easy construction. Two segments of steep grade were used to minimize the length of road in the Class I stream buffer; ~2+67 stations of 15% adverse and ~3+55 stations of 16% favorable. Horizontal alignment is fair. Provide for fish passage on the Class I stream. Potential rock pit south of Landing 4. Road varies from the paper plan in that it was extended to the NW to access additional volume.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Viewed in the background from small boat route. Flat land and foreground trees should screen road. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84971 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	0.40	P	SHORT - TERM	L	1
D						
	83	0.40	P	INTERMITTENT	L	1
E						
	83	0.40	P	SHORT - TERM	L	1

Roads: Road 84971 is shown as system road to southern most landing in 331048; however, future use of this facility is limited to accessing a future landing near north boundary of 331048. Therefore, system road ends at this landing. The system road is 542 feet long at favorable 9% grade, crossing gently to moderate sideslopes. The temporary road is 1250 feet long, accessing three landings in 331048 on grades ranging from 9% favorable to ±2% on gentle to moderate

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Viewed in background from small boat route. Road screened by trees except in unit where unit is oblique to view. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84979 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	0.14	P	SHORT - TERM	L	1

Roads: Road 84979 was needed to access landing #2 in Unit 331049. It is planned for extension to reach a future landing and unit to the north. Road 84979 is 840 feet long; grade is 13% favorable on generally moderate slopes. Approximately 150 feet of steep ground is encountered in vicinity of station 2+00 - 3+00 but sections should self-balance.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84981 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B	82	0.89	P	INTERMITTENT	L	1
C	82	0.89	P	INTERMITTENT	L	1
D	82	0.89	P	SHORT - TERM	L	1
E	82	0.01	P	SHORT - TERM	L	1

Roads: Road begins at station 0+00 to station 3+30 at Road 322039-2. Road accesses Landings 321018-2,3. Moderate adverse grades 5-10%. Approximately 300' of 15% favorable Grade. 2 switchbacks both 70'R. Located station 14+56 (8% adverse) and station 29+00 (10% adverse). Easy construction on gentle/moderate side slopes. Total stations = 44+25.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Road may affect potential wildlife track corridor in saddle on ridge.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84982 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B	82	0.90	P	INTERMITTENT	L	1
C	82	0.90	P	INTERMITTENT	L	1
D	82	0.90	P	INTERMITTENT	L	1
E	82	0.90	P	INTERMITTENT	L	1

Roads: 61 stations of generally simple construction. 5.5 stations of full bench/end haul. Grades mostly moderate, with 5 stations of 15% favorable, to avoid steep ground. 2 potential rock pits at 25+00 and 45+00 at upper slope location.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Road may affect potential wildlife travel corridor through saddle on ridge.

Visuals/Recreation: VQO: Modification. Viewed in the background from small boat route. Oblique to view. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84984 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	82	1.99	P	INTERMITTENT	L	1
	86	0.15	P	INTERMITTENT	L	1
Total Miles		2.14				
C						
	82	1.99	P	INTERMITTENT	L	2
	86	0.15	P	INTERMITTENT	L	2
Total Miles		2.14				
D						
	82	1.99	P	INTERMITTENT	L	1
	86	0.15	P	INTERMITTENT	L	1
Total Miles		2.14				
E						
	82	1.99	P	INTERMITTENT	L	1
	86	0.15	P	LONG - TERM	L	1
Total Miles		2.14				

Roads: No construction difficulties. Road located at grades of +10 to -7% with some short sections of -9% and +15%. Two sections of end haul at Station 88+00, 94+65, and 102+00. Rock pits observed at Station 36+00, 55+14, 79+00 and 105+82. Two large stream crossings at Stations 54+70 and 96+06.

Soils: No concerns.

Fisheries/Hydrology: Class II stream changed to Class III due to gradient and barriers. No concerns. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: Road may affect potential wildlife travel corridor through saddle at drainage divide.

Visuals/Recreation: Background/Not seen. VACH, VQOM. No major concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84985 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	82	0.42	P	SHORT - TERM	L	1

Roads: Road begins station 0+00 = station 70+87 Road 8498 accesses Landing 321007-1. Grades mostly 10% adverse ranging to 2% favorable Road crosses 5 small V-notches. Largest fill is 14'. 2+55 station of end haul required. Good location.

Soils: Road realigned due to soils concerns. Now OK.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Partial Retention. Viewed in the middleground from the small boat route. Cuts are limited to 8 ft. height - remaining timber should screen view of road. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 84988 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	82	0.24	P	SHORT - TERM	L	1
C						
	82	0.24	P	SHORT - TERM	L	1

Roads: Location is mainly midslope, with sideslopes 10% to 45%. Road grade is a rolling ±2%. No construction concerns. Road does not significantly vary from paper plan.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 440013 (see Map 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	87	0.07	P	SHORT-TERM	L	1
	89	0.12	P	SHORT-TERM	L	1
Total Miles		0.19				
D						
	87	0.07	P	SHORT-TERM	L	1
	89	0.12	P	SHORT-TERM	L	1
Total Miles		0.19				
E						
	87	0.07	P	SHORT-TERM	L	1
	89	0.12	P	SHORT-TERM	L	1
Total Miles		0.19				

Roads: Road is located on rolling terrain, with sideslopes less than 40%. Grades range from 10% adverse to 5% favorable, with the majority of the road being 5% adverse. No significant construction concerns. Road does not significantly vary from the paper plan.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 440015 (see Map 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	87	0.17	P	SHORT - TERM	L	1
	89	0.71	P	SHORT - TERM	L	1
Total Miles		0.88				
D						
	87	0.17	P	SHORT - TERM	L	1
	89	0.71	P	SHORT - TERM	L	1
Total Miles		0.88				
E						
	87	0.17	P	SHORT - TERM	L	1
	89	0.71	P	SHORT - TERM	L	1
Total Miles		0.88				

Roads: Location is generally midslope, with sideslopes 15% to 60%. Grades are mainly favorable, 10% to 18%, with an approx. 600' section of, 5% to 10%, adverse. Road contains four sections requiring endhaul; Stations 10+40 to 11+00, Station 15+25 to Station 15+70, Station 23+00 to Station 25+00, and Station 31+00 to Station 35+00. Road does not significantly vary from paper plan.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 440020 (see Maps 2 and 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	89	1.41	P	LONG - TERM	L	1
C						
	89	1.41	P	LONG - TERM	L	1
D						
	83	0.26	P	LONG - TERM	L	1
	89	1.92	P	LONG - TERM	L	1
Total Miles		2.17				
E						
	89	1.42	P	LONG - TERM	L	1

Roads: Road # changed to 440020; 44002 already in use. Beginning at station 336+00 on 8496, road ascends generally 10-12% to switchback near Landing 29106-3 (between knob & main ridge), turning northeasterly at 7-10% across fairly steep sidehill to switchback above muskegs on main ridge. From switchback, ascends ≈ 11% across muskegs to sidehill, then climbs hard (11-14%) to Landing 29106-4 and beyond to get above headwalls/V-notch draws. Flattens (±2%) and descends into 29107-1, then climbs (4-7%) northward across dissected topography to saddle. From saddle climbs stiffly (8-10%) westward to avoid V-notch in 332075, then descends (-8%) to end of road. Possible future junction 800' W of saddle for road to SW to complete system essentially as shown on plan. Route contains four difficult stream crossings (17+40, 28+50, 56+34, 72+58) and approximately 20 stations of full bench/end haul. System joins 6 temporary roads to various landings.

Soils: No concerns.

Fisheries/Hydrology: All crossings are Class III.

Wildlife: No concerns.

Visuals/Recreation: VQO: Maximum Modification/Modification. Road viewed in far distant background or not seen. Conforms to topography minimizing cut and fill in viewed area. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849346 (see Map 5)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	79	0.70	P	SHORT - TERM	L	1
C						
	79	0.70	P	SHORT - TERM	L	1

Roads: No concerns.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: Modification viewed in middleground from small boat route. Steep slopes likely to require large cuts @ several locations. Road construction will result in maximum modification exceeding VQO. Mitigation potential limited. Recommend consideration of helicopter harvest or dropping units in this area.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849411 (see Maps 3 and 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E						
	83	0.24	P	INTERMITTENT	L	1
	84	1.11	P	INTERMITTENT	L	1
Total Miles		1.36				

Roads: Route follows a varying terrain with a wide variety of soils. Generally balanced design construction is expected with some end-dump and full bench excavation. A short segment of 18% favorable grade is needed to access Unit 333079 and reduce a substantial amount of paper planned road. A potential quarry site of a quarzite deposit is accessed by this route in Unit 341094.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Road may affect potential track corridor for wildlife through saddles and along edge lines.

Visuals/Recreation: VQO: Modification. Viewed in the midground form Sandborn Canal. Steep viewing angle and foreground trees should effectively screen road. Additionally, topography in field more complex than shown on plan, small hillocks will screen portions of the road. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849412 (see Map 3 and 6)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E						
	83	0.27	P	SHORT - TERM	L	1
	84	0.87	P	SHORT - TERM	L	1

Roads: Road 849412 was originally designed to access 333092, but dropped to reserve goshawk habitat. Road reconfigured on route of Temporary Road to serve 341097 & 333090. 849412 leaves 84941 at station 58+35 on 10% favorable grades south and southeast to a broad ridge nose above 84941, then turns southwesterly, climbing stiffly (-15% favorable) along moderate sidehills to moundy scrub terrain at south end of major high ground. Road turns northwesterly, proceeding through small valleys/swales on rolling ± grades to a major saddle, then turns northerly on stiff (-12 to -15%) favorable grades to junction with Temporary Road 333090-1. From this point, road is gently (5%) adverse to Landings 333090-2, 3, +4 (end of road). No major drainages. Brief endhaul sections @ 13+50 - 15+50, 200+00 - 23+00. Rock fill needed in swales/low spots; available from knobs @ Landings 341097=1+2, 333090-4&5, and from through cut in knob at station 40+00.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Road is within 1/2 mile of goshawk nest. Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Visuals/Recreation: VQO: Partial Retention. Viewed in midground from Sandborn Canal. Unit -092 deleted eliminating need for road past Unit -097. Extensive cuts and fills could result in exceeding VQO. Maintain trees and covered downslope from road to the maximum possible extent.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849502 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	82	1.75	P	INTERMITTENT	L	1

Roads: Road location follows relatively gentle terrain with moderate grades. End hauling is required from station 7+50 to 9+50 and from station 19+00 to 22+50. Possible rock quarry located at station 21+00.

Soils: No concerns.

Fisheries/Hydrology: Class II stream flagged near 321020. No other stream crossing. No concerns as long as the integrity for the banks is maintained.

Wildlife: No concerns.

Visuals/Recreation: VQO: Partial Retention. Viewed in the midground from the small boat route. Large bench cuts in this area could result in modification or maximum modification exceeding VQO. Minimize cuts and fills.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849503 (see Map 1)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C	82	0.98	P	INTERMITTENT	L	1

Roads: Road was field identified as Road 321022-2. Majority of road grade within Unit 321022 is 15% in order to access upper landings. Potential rock quarry located at station 36+00. Final 10 stations are located on wet ground with gentle side slopes.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Partial Retention. Viewed in the midground from the small boat route. Large bench cuts in this area could result in modification or maximum modification exceeding VQO. Minimize cuts and fills.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849511 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
D						
	83	0.24	P	SHORT - TERM	L	1
E						
	83	0.24	P	SHORT - TERM	L	1

Roads: Road is ridgetop in location, with sideslopes less than 40%. Grades range from 10% adverse to 15% favorable, but are generally a rolling 8% favorable. First 800' of road is located in muskeg, with the remaining portion of the road located on common material. Road varies form the paper plan in that it is a spur off of the 84951 instead of being the 84951.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849611 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	0.76	P	INTERMITTENT	L	1
D						
	83	0.76	P	INTERMITTENT	L	1
E						
	83	0.76	P	INTERMITTENT	L	1

Roads: 849611 extends for 48+52 and has a temporary spur of 2+45 at 15+00. Potential rock pit 23+00 to 25+00: complex construction of 4.5 stations at 22+50. Maximum grades are -2 to -5%. Route accesses an upper bench and provides excellent yarding. No significant crossing.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Most of road not seen. Where seen, screened by down hill trees.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849615 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	83	0.34	P	INTERMITTENT	L	1
C						
	83	0.35	P	INTERMITTENT	L	1
E						
	83	0.47	P	SHORT - TERM	L	1

Roads: Simple hoe construction is planned. No rock sources were located. Road 38+30 station provides efficient access for yarding Units 332056 & 332057. Only minor streams were crossed.

Soils: See prefield on Unit 332056 and 332057. No concerns in vicinity of road.

Fisheries/Hydrology: Road crosses a Class III stream in Unit 332056 and one V-notch Class III stream in Unit 332057. Road should follow topographic contours closely at V-notch to minimize fill.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Viewed in background from small boat route. Road uses minimal cut and fill. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 849631 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E	83	0.28	P	SHORT - TERM	L	1

Roads: Road is generally easy construction, with two segments of concern. From station 9+60 to station 15+20, boulders on, or near, center line will need to be shot. Station 16+73 marks the beginning of a ≈ 127' section of full bench construction; end haul required. Road grades are favorable; -5% to -14%. Alignment is poor. Road varies from the paper plan in that the road status has been upgraded from temporary to specified (road).

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8494111 (see Map 3)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
E						
	83	0.27	P	SHORT - TERM	L	1
	84	0.08	P	SHORT - TERM	L	1

Roads: Generally easy construction with moderate grades. Road location follows low rock ridges for approximately 5 stations, which may allow rock pit development. Road is marked in field as 333082-1. Road not laid out to 333089, since upper slopes not included in unit as laid out.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: No concerns.

Visuals/Recreation: VQO: Modification. Viewed in background from Sandborn Canal. Most of road not seen. Should meet VQO.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
ROAD 8496002 (see Map 2)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B						
	89	1.38	P	LONG-TERM	L	1
C						
	89	1.38	P	LONG - TERM	L	1
D						
	89	1.38	P	LONG - TERM	L	1

Roads: 68+41 stations. 2 stations of 15% adverse. Moderate grades ≤10% for remainder of road. Moderate sideslopes. Hoe/end dump construction. Two Class II stream crossings at Station 7+68 and Station 15+75.

Soils: No concerns.

Fisheries/Hydrology: Class II crossings at 7+68 is a 4' wide channel, 15% grade, contained by boulders. Class II crossing at 15+75 is 7' wide channel, minor cutting colluvial contained. Recommend a hydrologic analysis following final location to determine drainage structure and size.

Wildlife: No concerns.

Visuals/Recreation: No concerns.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
MODIFICATION 1 (for Road 84941) (see Figure 2-5 in EIS)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
B	84	1.3	P	LONG-TERM	C	2
C	84	1.3	P	LONG-TERM	C	2
D	84	1.3	P	LONG-TERM	C	2
E	84	1.3	P	LONG-TERM	C	2

Roads: Passes through moderate terrain with little merchantable timber. Moderate road construction.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Visuals/Recreation: VQO: Modification/Maximum Modification. Road is generally on lower slopes and buffered by trees. Portion not seen, remainder in midground.

Cultural: No concerns.

PORT HOUGHTON/CAPE FANSHAW ROAD SUMMARY CARD
MODIFICATION 2 (For Road 6122 and 84940) (see Figure 2-6 in EIS)

Alternative	VCU	Road Miles	Road Status	Service Life	Functional Class	Post-harvest Maintenance Level
C						
	84	0.64	P	LONG-TERM	C	2
	89	2.16	P	LONG-TERM	C	2
Total Miles		2.8				

Roads: Gentle terrain, easy road construction.

Soils: No concerns.

Fisheries/Hydrology: No concerns.

Wildlife: Avoid disturbance to nesting goshawks known to be in the vicinity. Prior to harvest, search for nest to ensure that goshawk guidelines in effect are implemented.

Visuals/Recreation: Not seen.

Cultural: No concerns.

Port Houghton/Cape Fanshaw Road Pool



Legend

- Research Natural Area
- Private lands
- Roads
- Temporary Roads
- Streams
- Proposed Bridges Over 40 Feet

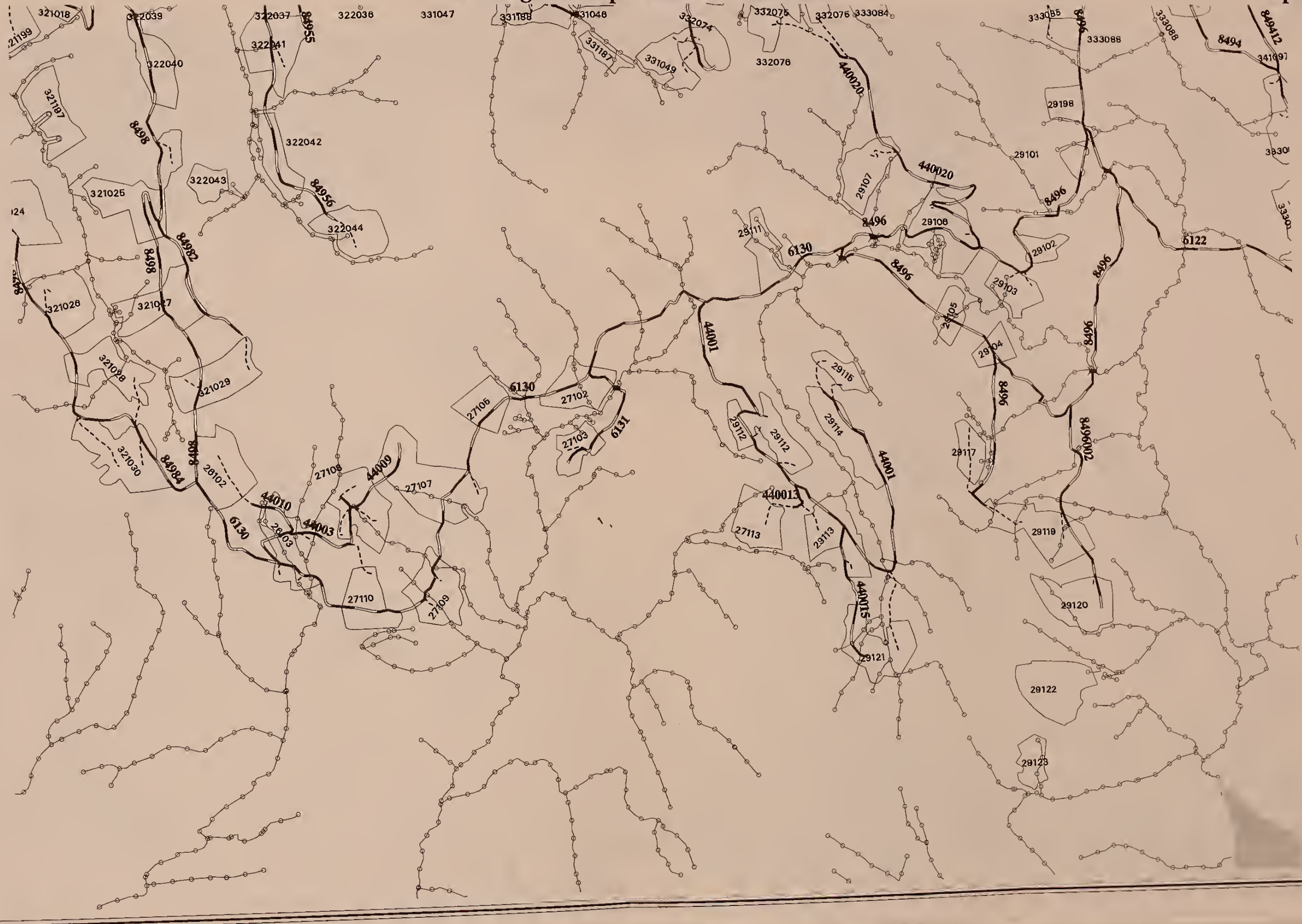
Port Houghton/Cape Fanshaw Road Pool

Map 1



Port Houghton/Cape Fanshaw Road Pool

Map 2



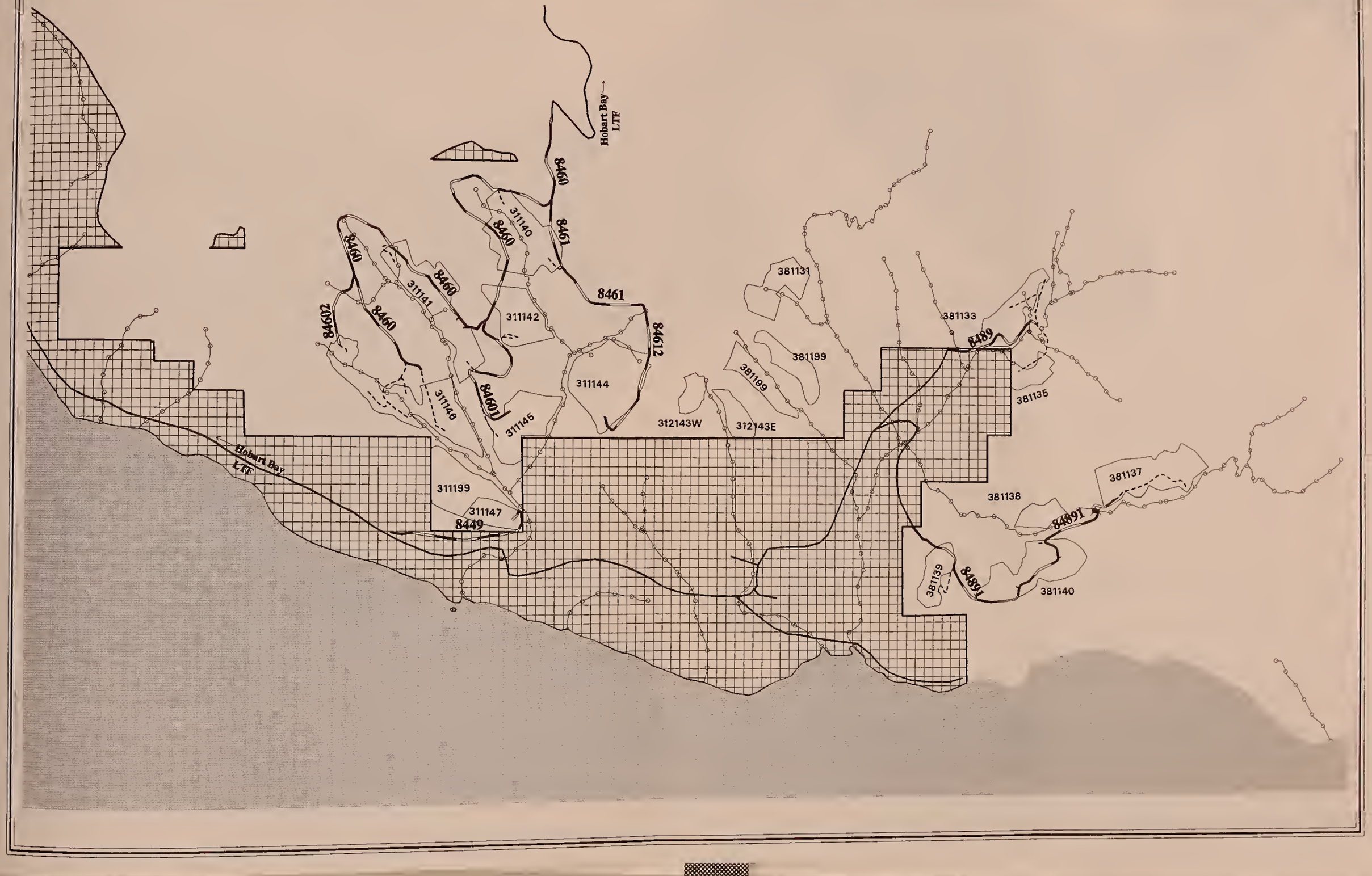
Port Houghton/Cape Fanshaw Road Pool

Map 3



Port Houghton/Cape Fanshaw Road Pool

Map 4



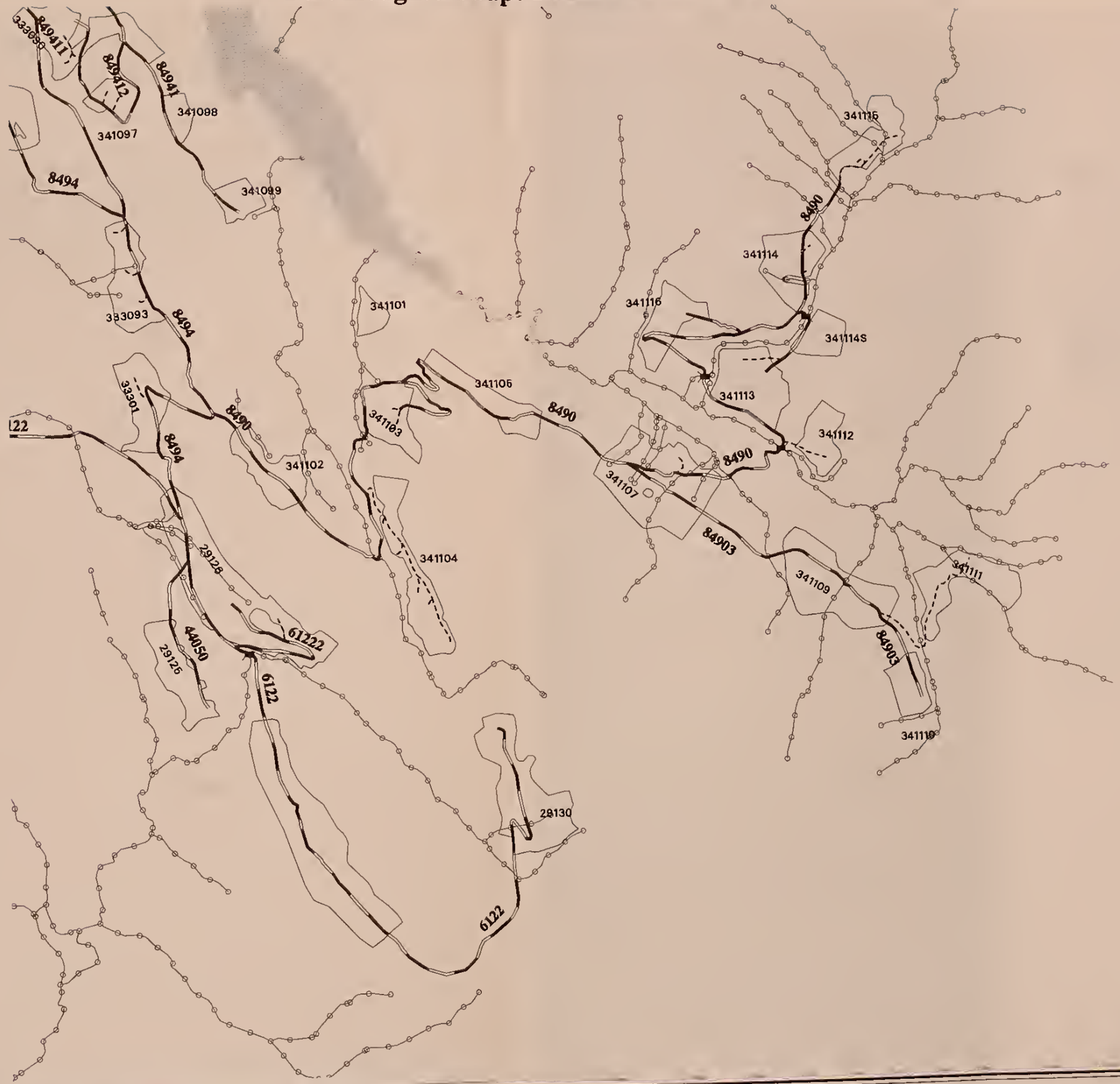
Port Houghton/Cape Fanshaw Road Pool

Map 5



Port Houghton/Cape Fanshaw Road Pool

Map 6



Appendix C

Road Management Objectives

Appendix C

Road Maintenance Guidelines

Appendix C

Road Management Objectives

Definitions

Road Status:

E = Existing road.
E(R) = Existing road, scheduled for reconstruction.
P = Proposed for construction.

Service Life (the length of time that a facility is expected to provide a specified service):

Long-term = service life at least 10 years
Intermittent = closed/open to traffic as required
Short-term = service life less than 10 years

Service Level (describe the significant traffic characteristics and operating conditions for a road. The levels reflect factors such as speed, travel time, traffic interruptions, freedom to maneuver, safety, driver comfort, convenience, and operating costs):

Level D = Meets minimum standards for safety, driver comfort not high as designated for log truck traffic only, 0-5 mph speed limit, curve radius held to a minimum due to terrain.

Functional Classification (the way in which a road services land and resource management needs and the character of service it provides);

A = **Arterial road.** Provides service to large land areas and usually connect with other arterial roads or public highways. (Due to the remoteness of the Port Houghton/Cape Fanshaw project area, and the fact that the road systems planned for the area are small and not interconnected, no roads are classified as arterials.)
C = **Collector road.** Serves smaller land areas that an arterial road. Usually connects arterial roads to local roads or terminal facilities.

L = **Local road.** Connects terminal facilities with other local, collector, or arterial road, and public highways. Usually local roads are for a single purpose, e.g. timber harvest.

Post-Harvest Maintenance Level (the level of service provided by, and maintenance required for, a specific road after harvest):

Level 1 = Level of maintenance assigned to intermittent service roads during the period they are not open and maintained for motor vehicle traffic. At this level, basic custodial maintenance is performed to keep damage to adjacent resources at an acceptable level and to perpetuate the road to facilitate future management activities. In the Port Houghton/Cape Fanshaw RMO summary tables, this applies to short-term roads after the purpose for which they were constructed is completed. At this level, drainage structures are removed and the roadbed is waterbarred, to prevent damage to adjacent resources.

Level 2 = Level of maintenance normally assigned to roads needed by high clearance vehicles between periods of harvest. Planned post-harvest vehicle traffic in the Port Houghton/Cape Fanshaw project area is expected to be either high clearance vehicles (HCV) or all-terrain vehicles (ATV), to accomplish administrative and recreation access objectives. Roads will be logged out and brushed as necessary to provide passage for ATV's. The road prism will be maintained to provide for passage of high clearance vehicles. Barricades will be placed at the entrance of each road, maintained at this level, for ATV access, to effectively block vehicles greater than 50" in width.

Future Commercial Timber Volume (a determination of whether there is additional timber that this road could access in the future).

YES - NO

Silviculture/Administration (access needed to perform administration or post sale silviculture practices, and method of access).

HCV = High clearance vehicle, pick-up type 4-wheel drive.
ATV = All terrain vehicle, smaller 4-wheel or motorcycle.

Post-Harvest Public/Recreation Traffic Strategies (Strategies employed where necessary to control any class or type of traffic. Use to prevent damage to the roadway, to abate unsafe traffic conditions, or to control use to meet other specific management direction such as protecting wildlife habitat or achieving semiprimitive recreation objectives):

Encourage = Encourage public use by means of appropriate signing, public notification, and active maintenance of the road prism.

Accept = Public use is allowed, but no encouraged, while road is maintained for administrative access.

Discourage = Public access is discouraged by means of allowed alder growth at road entrance, non-removal of blowdown, or road prism deterioration within acceptable environmental limits. Road may also be signed to discourage use (e.g., Not Maintained for Public Traffic).

Eliminate = Road is physically blocked to after sale traffic. Where prescribed for long-term intermittent roads, this strategy is achieved by placing impassable barricades at road entrances. On short-term roads, removal of drainage structures effectively block traffic.

Prohibit = Public access is prohibited by a road order (i.e., CFR closure). Implementation of this strategy on remote road systems such as Port Houghton/Cape Fanshaw, may require the installation of gates, in addition to public notification and appropriate signing.

Post-Harvest Resource Concerns (denotes when that specific resource had a concern with this particular road).

ROAD MANAGEMENT OBJECTIVES

Table 1: Alternative B

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
79	84934	2.67	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
79	849346	0.70	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
79	84937	0.20	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
80	8489	0.56	P	SHORT - TERM	D	L	1	NO	ATV, 20yrs	PROHIBIT	---	---	---	---
80	84891	1.76	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	---	---
82	8495	3.90	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	---
82	84955	1.40	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
82	84956	2.32	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	X	---	---	X
82	8498	4.90	P	LONG - TERM	D	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
82	8498	1.99	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	---
82	84981	0.89	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
82	84982	0.90	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	---	---
82	84984	1.99	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
82	84988	0.24	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
82	8499	1.76	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	X
83	8494	3.98	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
83	8495	5.94	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	---
83	84951	0.32	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84952	1.52	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84953	0.87	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84954	1.17	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
83	8496	5.07	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
83	84961	1.93	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
83	84961	1.86	P	INTERMITTENT	D	C	1	YES	ATV, 20yrs	PROHIBIT	X	X	X	X
83	849611	0.76	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
83	849615	0.34	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	X
83	8497	1.80	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84971	0.40	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84979	0.14	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
84	8490	0.56	P	INTERMITTENT	D	C	1	YES	ATV, 20yrs	PROHIBIT	X	X	X	X
84	84934	1.13	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
84	84935	0.37	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
84	8494	0.26	P	LONG - TERM	C	C	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	X
84	8494	0.08	P	LONG - TERM	C	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	X
860	44002	0.06	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	44003	0.73	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	44010	0.34	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	6130	0.50	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
860	8498	0.05	P	LONG - TERM	D	L	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
860	84984	0.15	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X

ROAD MANAGEMENT OBJECTIVES

Table 1: Alternative B (Continued)

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
870	44001	1.18	P	LONG - TERM	D	L	1	YES	HCV, 20yrs	PROHIBIT	---	---	X	---
870	440013	0.07	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
870	440015	0.17	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
870	44002	0.25	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
870	6130	3.47	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
870	6131	0.08	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	---	---
890	44001	1.17	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
890	440013	0.12	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	440015	0.71	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	440020	1.41	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	6130	0.96	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
890	8494	0.50	P	LONG - TERM	C	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	X
890	8496	2.61	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
890	8496	1.44	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
890	8496002	1.38	P	LONG - TERM	C	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	8496 REVISION	2.65	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---

Table 2: Alternative C

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
79	8493	2.82	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	X	---	X	---
79	84931	1.01	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
79	84932	2.01	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	X	---	---	X
79	84933	1.32	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
79	84934	2.67	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	---	---	X	---
79	849346	0.70	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
79	84937	0.20	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
80	8489	0.56	P	SHORT - TERM	D	L	1	NO	ATV, 20yrs	PROHIBIT	---	---	---	---
80	84891	1.76	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	---	---
81	8449	0.89	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	---	---
81	8460	3.56	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	PROHIBIT	X	X	X	---
81	84601	1.00	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
81	84602	0.43	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	---	---
81	8461	0.88	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	---	---
81	84612	0.85	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---

ROAD MANAGEMENT OBJECTIVES

Table 2: Alternative C (Continued)

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
82	8495	5.95	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	---
82	8495	3.69	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	PROHIBIT	X	X	X	---
82	849502	1.75	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	X
82	849503	0.98	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
82	84955	1.40	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
82	84956	1.13	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	X
82	84957	0.77	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
82	8498	6.89	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
82	84981	0.89	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
82	84982	0.90	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	---	---
82	84984	1.99	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	---	---	X	X
82	84985	0.42	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
82	84988	0.24	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
82	8499	1.76	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	X
83	8494	3.67	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
83	84941	0.39	P	INTERMITTENT	D	C	2	YES	HCV, 20yrs	PROHIBIT	---	X	---	---
83	8495	5.94	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	---
83	84951	0.32	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84952	1.52	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	8496	5.07	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
83	84961	1.28	P	INTERMITTENT	D	C	2	YES	HCV, 20yrs	PROHIBIT	X	X	X	X
83	849615	0.35	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	X
83	8497	1.17	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
84	6122	0.20	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
84	8490	1.46	P	LONG - TERM	C	C	2	NO	HCV, 20yrs	PROHIBIT	X	X	X	X
84	84934	1.08	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	PROHIBIT	---	---	X	---
84	84935	0.37	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
84	8494	0.26	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	PROHIBIT	---	X	X	X
84	8494	0.08	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	PROHIBIT	---	X	X	X
860	44002	0.06	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	44003	0.73	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	44010	0.34	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	6130	1.26	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
860	8498	0.05	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
860	84984	0.15	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	---	---	X	X
870	44001	0.53	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
870	44002	0.25	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
870	6130	2.46	P	LONG - TERM	C	C	1	YES	HCV, 20yrs	ACCEPT	---	X	---	---
870	6131	0.07	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	---	---

ROAD MANAGEMENT OBJECTIVES

Table 2: Alternative C (Continued)

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
890	440020	1.41	P	LONG - TERM	C	L	2	YES	ATV, 20yrs	ACCEPT	X	X	---	---
890	44050	0.82	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	6122	4.07	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	ACCEPT	---	---	X	---
890	61222	0.91	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	8494	1.23	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
890	8496	0.21	P	INTERMITTENT	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
890	8496	2.95	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
890	8496002	1.38	P	LONG - TERM	C	L	1	YES	HCV, 20yrs	ACCEPT	---	X	---	---
890	8496 REVISION	1.91	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---
890	8496 REVISION	0.73	P	LONG - TERM	D	C	2	YES	ATV, 20yrs	PROHIBIT	---	---	---	---

Table 3: Alternative D

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
80	84891	1.76	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
82	8495	4.99	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	---
82	84955	1.40	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	X	---
82	84956	2.32	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---
82	84957	0.77	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	X
82	8498	1.77	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
82	8498	1.99	P	LONG - TERM	D	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
82	84981	0.89	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	---
82	84982	0.90	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
82	84984	1.99	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	---	---
82	8499	1.76	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
83	440020	0.26	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	X
83	8494	3.98	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---
83	84950	0.52	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	X
83	8495	5.94	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---
83	84951	0.98	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	X	---
83	849511	0.24	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84952	1.52	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
83	84953	0.44	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84954	1.17	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	8496	5.07	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	---	X	X

ROAD MANAGEMENT OBJECTIVES

Table 3: Alternative D (Continued)

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
83	84961	1.93	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
83	84961	1.86	P	INTERMITTENT	D	C	1	YES	ATV, 20yrs	PROHIBIT	X	X	X	X
83	849611	0.76	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	X	X
83	84962	0.61	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
83	8497	0.35	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84971	0.40	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
84	8490	1.46	P	INTERMITTENT	D	C	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---
84	8494	0.08	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
84	8494	0.26	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
860	6130	1.26	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	PROHIBIT	---	X	X	X
860	8498	0.05	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
860	84984	0.15	P	INTERMITTENT	D	L	1	YES	HCV, 20yrs	PROHIBIT	---	X	X	---
870	44001	1.18	P	LONG - TERM	D	L	1	YES	HCV, 20yrs	PROHIBIT	---	---	X	X
870	440013	0.07	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
870	440015	0.17	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
870	6130	3.47	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---
870	6131	0.87	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	---
890	44001	2.41	P	LONG - TERM	D	L	1	YES	HCV, 20yrs	PROHIBIT	---	X	---	---
890	440013	0.12	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
890	440015	0.71	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	440020	1.92	P	LONG - TERM	D	L	1	YES	HCV, 20yrs	PROHIBIT	---	---	---	---
890	6130	0.96	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---
890	8494	0.49	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
890	8496	1.22	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
890	8496	1.03	P	LONG - TERM	C	L	1	YES	HCV, 20yrs	ACCEPT	---	X	---	---
890	8496	2.81	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
890	8496002	1.38	P	LONG - TERM	C	L	1	YES	HCV, 20yrs	ACCEPT	---	X	---	---
890	8496 REVISION	0.73	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	---	---

Table 4: Alternative E

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
82	8495	0.52	P	LONG - TERM	D	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	---
82	84955	1.40	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
82	84956	2.32	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	ACCEPT	X	---	---	X
82	8498	1.99	P	LONG - TERM	D	C	2	YES	HCV, 20yrs	PROHIBIT	---	X	X	---
82	8498	1.77	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	---
82	84981	0.01	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
82	84982	0.90	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	---	---
82	84984	1.99	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X

ROAD MANAGEMENT OBJECTIVES

Table 4: Alternative E (Continued)

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
83	8494	4.00	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
83	84941	0.69	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	---	---
83	849411	0.24	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	---
83	8494111	0.27	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	849412	0.27	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	8495	5.94	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	---
83	84951	0.98	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	849511	0.24	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
83	84952	1.52	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84953	0.87	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84954	1.93	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	DISCOURAGE	---	---	X	X
83	8496	5.07	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
83	84961	1.86	P	INTERMITTENT	D	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
83	84961	1.93	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	X	X
83	849611	0.76	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	---
83	849615	0.47	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	---	---	X
83	84962	0.61	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84963	0.90	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
83	849631	0.28	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	8497	1.17	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
83	84971	0.40	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
84	8490	3.96	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
84	8490	3.49	P	INTERMITTENT	D	L	2	YES	HCV, 20yrs	DISCOURAGE	X	X	X	X
84	84902	0.58	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	---	---
84	84903	2.05	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	X	X
84	84905	0.31	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	X	X	---	---
84	84909	0.44	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	---	---
84	8494	0.26	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
84	8494	0.08	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
84	84941	1.48	P	LONG - TERM	C	L	2	YES	HCV, 20yrs	ACCEPT	---	X	---	---
84	849411	1.11	P	INTERMITTENT	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	X	---
84	8494111	0.08	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
84	849412	0.87	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	44002	0.06	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	44003	0.73	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	44010	0.34	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
860	6130	1.26	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
860	8498	0.05	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
860	84984	0.15	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	X
870	44001	1.71	P	LONG - TERM	D	L	1	YES	HCV, 20yrs	PROHIBIT	---	---	X	---
870	440013	0.07	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
870	440015	0.17	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
870	44002	0.25	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
870	6130	3.47	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
870	6131	0.08	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	X	---	---

ROAD MANAGEMENT OBJECTIVES

Table 4: Alternative E (Continued)

VCU	ROAD NUMBER	ROAD MILES	ROAD STATUS	SERVICE LIFE	SERVICE LEVEL	FUNCT. CLASS	POST-HARVEST MAINT. LEVEL	POST-HARVEST ACCESS NEEDS/TRAFFIC STRATEGIES			POST - HARVEST RESOURCE CONCERNS (SEE ROAD CARDS)			
								FUTURE COMML. VOL.	SILVIC/ ADMIN.	PUBLIC/ RECREATION	HYDRO/ SOILS	W/L	SUB-SIS.	FISH
890	44001	1.17	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
890	440013	0.12	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	440015	0.71	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	440020	1.42	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	44050	0.82	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	6122	2.11	P	LONG - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	X	---
890	61222	0.91	P	SHORT - TERM	D	L	1	YES	ATV, 20yrs	PROHIBIT	---	---	---	---
890	6130	0.96	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	X	X	---
890	8494	1.23	P	LONG - TERM	D	L	2	YES	HCV, 20yrs	ACCEPT	---	X	X	X
890	8496	1.59	P	LONG - TERM	D	L	1	YES	HCV, 20yrs	ACCEPT	---	X	---	---
890	8496	1.44	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	X	X	X	X
890	8496 REVISION	2.65	P	LONG - TERM	C	C	2	YES	HCV, 20yrs	ACCEPT	---	---	---	---

Appendix D

Units Greater than 100 Acres

PORT HOUGHTON/CAPE FANSHAW EIS HARVEST UNIT DESIGN:
Units Exceeding One-Hundred Acres - Analysis and Request for Approval

Six regeneration units exceeding 100 acres in size are proposed for the Port Houghton/Cape Fanshaw project area. Current USDA-Forest Service direction limits the size of created openings to 100 acres in the Sitka spruce-western hemlock forests of Southeast Alaska. Larger created openings can be approved under certain circumstances.

Ten factors must be considered to determine if conditions warrant a larger size. (See Tongass NF policy letter dated November 4, 1993.) This report documents the conditions on the six large regeneration units and provides background information that supports the recommended silvicultural treatment.

Area: Stikine
Unit: 27107 (160)
Rx: Clearcut or Sanitation Salvage
Acres: 120
Predominant Rationale: items 3, 6, 7, 8, and 10.

1. **Topography.** Mid to upper slope skyline or helicopter unit on south to southeast exposure averaging 40% slope.
2. **Relationship of units to other natural or artificial openings and proximity of units.** Unit 27107 is separated from proposed Unit 27108 by a future entry that is about 400 ft in width. A muskeg is located east of the unit. Adjacent stands to the south and east are included in the proposed Stikine Alaska yellow-cedar decline sanitation salvage. If the Stikine Alaska yellow-cedar decline sanitation salvage project is selected as the preferred alternative, the prescription for Unit 27107 will be sanitation salvage by helicopter rather than regeneration by clearcut and clearcut with reserves by skyline. No openings except for small patches less than three acres would be created in this scenario. If the helicopter alternative is not selected, adjacent stands will not be harvested at this entry. The remainder of this analysis assumes that the unit is regenerated by skyline systems and an opening exceeding 100 acres is created.
3. **Coordination and consistency with adjacent management areas.** Unit 27107 was expanded from 84 acres in the paper plan by the addition of setting 5 at the terminus of the upper road system and adjustment of logical setting boundaries on the four initial settings. The addition of setting 5 (+/- 25 acres) includes all timber tributary to the upper road system for this rotation.
4. **Effect on water quality or quantity.** The Class 2 stream below the unit has a 100-foot buffer on each side, as required by the Tongass Timber Reform Act (TTRA). The major Class 3 stream within the unit will be split-yarded and have a 50 foot no-cut buffer on each side. One-end suspension of logs during the yarding cycle will be a timber sale contract requirement.

5. **Visual absorption capacity (VAC).** The Visual Quality Objective (VQO) is Modification and the VAC is high. The unit is viewed in the background at 8 miles from a ferry route. Green tree retention and the uncut stream buffer will mitigate visual impact.
6. **Effect on wildlife and fish habitat.** The landscape will be less fragmented over the course of the next rotation if the harvest is concentrated into one larger unit. The road accessing the upper unit can be closed for a rotation. No-cut stream buffer and green tree retention will leave vertical structure diversity.
7. **Regeneration requirements for desirable tree species based upon latest research.** The unit is planned for a combination of seed tree, natural regeneration, and planting. Portions of the unit will be stocked with advanced regeneration immediately after harvest. Alaska yellow-cedar decline is present in the unit but rated as low, while decline in surrounding stands is moderate to high. The regeneration systems are planned as a "side by side" adaptive management trial of regeneration techniques. Sitka spruce will be planted in conjunction with Alaska yellow-cedar to improve productivity and maintain species diversity. Western hemlock regeneration is expected to be abundant.
8. **Transportation and harvesting system requirement.** Unit is planned for a both large and small slackline yarders, based upon the lowest cost combination that is able to leave green trees in the unit. Project engineers concluded that a light partial harvest silvicultural prescription was not feasible for the unit without helicopter.
9. **Natural and biological hazards to the survival of residual trees and surrounding stands.** There is low to moderate windthrow risk to the leave strip between Units 27107 and 27108, and moderate windthrow risk to the no-cut leave strip and reserve trees within Unit 27107. Alaska yellow-cedar decline is extensive in the general area, but windthrow of reserve trees could reverse the extensive podzol formation correlated with Alaska yellow-cedar decline. This is one of the adaptive management trials being integrated into the Port Houghton/Cape Fanshaw project proposal.
10. **Relative total costs of preparation, logging, and administration of harvest cuts.** Large unit size and ability to close road for ensuing rotation improve harvest and administration economics.

Area: Stikine
Unit: 29126 (145)
Rx: Clearcut
Acres: 153
Predominant Rationale: items 6, 7, 8, and 10.

1. **Topography.** Mid slope skyline unit on southwest exposure averaging 40% slope.
2. **Relationship of units to other natural or artificial openings and proximity of units.** Unit includes a habitat island of muskeg and low productivity forest. Upslope from the unit is 400 to 600 feet of over-steepened (>70%, Hazard Class 4 soils) and potentially unstable terrain with timber volume greater than 30 MBF per acre. There are large muskegs of similar size and alignment to the proposed unit where the topography flattens above the Hazard Class 4 soils and where the terrain flattens below the unit.
3. **Coordination and consistency with adjacent management areas.** Units 29124 and 29126 from the paper plan Unit pool (72 and 67 acres respectively) were combined with the intervening leave strip after deletion of sensitive soils areas.
4. **Effect on water quality or quantity.** Class 2 stream is buffered adequately. One end suspension of logs during the yarding cycle will be a timber sale contract requirement.
5. **Visual absorption capacity.** The VQO is Modification and the VAC is high. Visual resource management is not an overriding concern with this unit.
6. **Effect on wildlife and fish habitat.** Less habitat fragmentation. Temporary road accessing unit can be closed and put-to-bed for a rotation.
7. **Regeneration requirements for desirable tree species based upon latest research.** The unit is planned for natural regeneration. If there are not 100 well-distributed Sitka spruce and Alaska yellow-cedar seedlings per acre by year 3, the unit will be interplanted with these species. Alaska yellow-cedar seed trees will be designated as leave trees in the northwest corner of the unit and surrounding the habitat island. Western hemlock regeneration is expected to be abundant. Seed is expected to be readily available from all species, as the unit is long and relatively narrow.
8. **Transportation and harvesting system requirement.** Unit is planned for a large slackline yarder and a running skyline based upon the lowest cost combination. Project engineers concluded that a partial harvest prescription was not feasible for the unit.
9. **Natural and biological hazards to the survival of residual trees and surrounding stands.** High to extreme windthrow risk to leave strip between Units 29126 and 29124 (as planned), given the position of slope, prevailing winds, forest series, and soil type.
10. **Relative total costs of preparation, logging, and administration of harvest cuts.** Large unit size and ability to close road for ensuing rotation improve harvest and administration economics.

7. **Regeneration requirements for desirable tree species based upon latest research.** The unit has been planned to provide a "side-by-side" operational trial of adaptive and ecosystem management techniques. Alaska yellow-cedar and Sitka spruce seed trees will be left on one-third of the unit and half of the unit will be planted. Alaska yellow-cedar regeneration is the focus in settings 1 and 2 (where most cedar now occurs) while the clearcut settings will be planted to Sitka spruce.
8. **Transportation and harvesting system requirement.** The entire unit can be yarded with a running skyline. A swing yarder will be required that can use the road as a continuous landing. This capability requirement is to ensure that Class 3 stream protection requirements and reserve tree distribution requirements can be readily met.
9. **Natural and biological hazards to the survival of residual trees and surrounding stands.** Windthrow risk is moderate to high in reserve trees and the surrounding stands. The large unit size reduces the amount of edge exposed to wind when compared to smaller, staggered settings. Some windthrow should be expected in leave strips to Units 332066 and 331048 in the event that they are included in the same alternative. Reserve trees will be selected for windfirm characteristics but will also provide for natural soil disturbance patterns and large woody debris recruitment in the event of blowdown.
10. **Relative total costs of preparation, logging, and administration of harvest cuts.** Large unit size improves harvest and administration economics. However, site specific objectives to retain reserve trees and mitigate watershed and visual impacts will increase preparation and logging costs by an estimated 30 to 40%.

Area: Chatham
Unit: 341107 (139)
Rx: Clearcut with Reserves
Acres: 128
Predominant Rationale: items 3, 6, 9, and 10.

1. **Topography.** Low to mid elevation skyline unit on a northeast exposure averaging 40% slope.
2. **Relationship of units to other natural or artificial openings and proximity of units.** Unit 341107 is separated from Unit 341105 by about 1500 ft and Unit 341109 by about 2200 ft. Unit 341113 is located about 1500 ft north but is separated by two Class 1 streams and a ridge. The open areas at the head of the Sandborn Canal estuary are about 1800 ft to the northwest. The unit is located in a heavily timbered area.
3. **Coordination and consistency with adjacent management areas.** Units 341105 through 341109 from the paper plan that totaled 361 acres were reconfigured into Units 341107 and 341109 that total 233 acres. The units were reconfigured to improve harvest and roading economics and to reduce watershed and habitat fragmentation impacts. The units are only included in the alternative that maximizes harvest per road mile constructed. There may be a conflict with the visual resource as seen by public land users in the Sandborn area. All units proposed that are tributary to the roads through 341107 (341103, 341104, 341105, 341109, 341110, 341111) will be harvested at one entry should the decision be made to construct the bridges over the Sandborn Canal creeks. One could expect that this portion of the planning area would not be subject to further harvest for at least 2 planning periods (20 yrs) and as many as 4 planning periods.
4. **Effect on water quality or quantity.** Five Class 3 streams upgrade to Class 2 upon exiting the unit and flow directly into a high value Class 1 stream below. Class 2 buffers are 120 ft and the most major Class 3 in the unit will have a 50 ft no-cut buffer. Suspended log or split logging away from Class 3 streams is required. Sitka alder will be seeded after harvest in disturbed areas.
5. **Visual absorption capacity.** The VQO is Modification and the VAC is high. Visual resource management is a concern for subsistence and recreation users in the Sandborn canal. Reserve trees, feathered and rounded edges, and scalloped breaks between settings will be used to soften the visual impact. The ridge that separates the two Class 1 streams below the unit shields the unit from view from travelers up the main fork of Sandborn Canal Creek.
6. **Effect on wildlife and fish habitat.** Reconfiguring 5 smaller units into two larger units and dropping acres reduces habitat fragmentation. Retention of reserve trees provides vertical habitat structure. Black bear are common in the area and populations are likely to respond favorably to the early seral feeding habitat. The water quality mitigation measures are designed to reduce impact to what is rated as one of the most valuable and sensitive fisheries in the planning area.
7. **Regeneration requirements for desirable tree species based upon latest research.** The unit is planned for natural regeneration. Sitka spruce and Alaska yellow-cedar seed trees are to be left along unit boundaries. Mistletoe is a concern in the hemlock

and is to be avoided in leave tree designation. Sitka spruce will be planted if natural regeneration does not provide at least 50 tree per acre by year three.

8. **Transportation and harvesting system requirement.** Unit harvest will require small and large slackline yarders. Reserve trees will be in groups along Class 3 streams and setting breaks because of logging feasibility. Logging engineers concluded that a partial harvest silvicultural prescription was not feasible for the unit. Clearcut with reserves was prescribed with the assumption that groups of trees would be retained within the unit at setting boundaries to minimize yarding problems.
9. **Natural and biological hazards to the survival of residual trees and surrounding stands.** Unit 341107 was rated as a moderate risk area for catastrophic windthrow. The large unit size and reconfiguration of units decreases the amount of stand edge subject to windthrow. Windthrow is expected in reserve trees in the unit. Reserve trees will be in groups and designation should consider windfirmness. Windthrow of reserves is viewed as recruitment of large woody debris and could have positive effects on soil ecology and regeneration of Sitka spruce.
10. **Relative total costs of preparation, logging, and administration of harvest cuts.** The large unit size improves harvest economics. Unit 341107 is the highest volume stand proposed for sale at Port Houghton. The volume and timber quality of Units 341107 and 341109 are important considerations in the economics of building the two bridges necessary to access this portion of the planning area at this and future entries.

Area: Chatham
Unit: 341109 (149)
Rx: Clearcut with Reserves
Acres: 105
Predominant Rationale: items 3, 6, 9, and 10.

1. **Topography.** Mid to upper elevation skyline unit on a northeast exposure averaging 40% slope.
2. **Relationship of units to other natural or artificial openings and proximity of units.** Unit 341109 is separated from Unit 341107 by about 2200 ft, from Unit 341110 by about 900 ft, and from Unit 34111 by about 600 ft. The unit is located in a heavily timbered area.
3. **Coordination and consistency with adjacent management areas.** Units 341105 through 341109 from the paper plan that totaled 361 acres were reconfigured into Units 341107 and 341109 that total 233 acres. The units were reconfigured to improve harvest and roading economics and to reduce watershed and habitat fragmentation impacts. The units are only included in the alternative that maximizes harvest per road mile constructed. There may be a conflict with the visual resource as seen by public land users in the Sandborn area. All units proposed that are tributary to the roads through Unit 341107 (Units 341103, 341104, 341105, 341109, 341110, 341111) will be harvested at one entry should the decision be made to construct the bridges over the Sandborn Canal creeks. One could expect that this portion of the planning area would not be subject to further harvest for at least 2 planning periods (20 yrs) and as many as 4 planning periods.
4. **Effect on water quality or quantity.** A high gradient Class 3 streams bisects the unit and flows into a high value Class 1 stream below. The unit is 700 ft or more south of the Class 1 stream. Suspended log and split logging away from Class 3 stream is required. Reserve trees are not recommended along the Class 3 because of windfall and resulting sediment directly into the stream.
5. **Visual absorption capacity.** The VQO is Modification and the VAC is high. Visual resource management is a concern for subsistence and recreation users traveling up the Sandborn canal. Reserve trees, feathered and rounded edges, and scalloped breaks between the middle settings will ameliorate the visual impact.
6. **Effect on wildlife and fish habitat.** Reconfiguring five small units into two larger units reduces habitat fragmentation. Retention of reserve trees in Unit 34109 provides some vertical habitat structure. Black bear are common in the area and populations are likely to respond favorably to the early seral feeding habitat. The water quality mitigation measures are designed to reduce impact to what is rated as one of the most valuable and sensitive fisheries in the planning area.
7. **Regeneration requirements for desirable tree species based upon latest research.** The unit is planned for natural regeneration. Sitka spruce and Alaska yellow-cedar seed trees should be left along unit boundaries. Sitka spruce will be planted if natural regeneration does not provide at least 50 tree per acre by year three.
8. **Transportation and harvesting system requirement.** Unit harvest will require small and large slackline yarders. Skyline extensions are needed outside of the unit

for deflection. Reserve trees will be in groups along setting breaks because of logging feasibility. Logging engineers concluded that a partial harvest system was not feasible for the unit. Clearcut with reserves was prescribed with the assumption that groups of trees would be retained within the unit at setting boundaries to minimize yarding problems.

9. **Natural and biological hazards to the survival of residual trees and surrounding stands.** Unit 341109 was rated as a moderate risk area for catastrophic windthrow. The large unit size and reconfiguration of units decreases the amount of stand edge subject to windthrow. Windthrow is expected in reserve trees in the unit. Reserve trees will be in groups and designation will consider windfirmness. Windthrow of reserves is viewed as recruitment of large woody debris and natural soil disturbance.
10. **Relative total costs of preparation, logging, and administration of harvest cuts.** The large unit size improves harvest economics. Unit 341109 is the second highest volume stand proposed for Port Houghton. The volume and timber quality of units 341107 and 341109 are important considerations in the economics of building the two bridges necessary to access this portion of the planning area at this and future entries.

Appendix E

Monitoring Plan

Appendix E

Monitoring Plan

Monitoring Plan in Association with Adaptive Management

Forest Plan Monitoring

The National Forest Management Act requires that National Forests monitor and evaluate the implementation of their forest plans (36 CFR 219.11). This evaluation provides the public and the Forest Service with the information necessary to ensure responsive and efficient management of National Forests.

The Forest Service uses three types of monitoring: implementation, effectiveness, and validation monitoring. Implementation monitoring assesses whether or not the project was implemented as planned and is in compliance with the Forest Plan. It answers the question: Did we do what we said we would do? Effectiveness monitoring answers the question: Did the thing we said we would do accomplish what we expected it to? It is especially important for evaluating the effectiveness of mitigation measures. Validation monitoring is conducted to determine whether initial assumptions used to develop alternatives and estimate effects are correct. It answers the question: Is there a better way to accomplish the objectives and achieve the desired future condition?

Adaptive Management

In addition to the standard timber plan proposed for the project area, alternatives have incorporated the concept of adaptive management to provide information on effects of forest management to be used on future timber sales.

Adaptive management is defined as a sequence of planning, acting, monitoring, evaluating, and adjusting management actions (Hollings 1978; Walters 1986). Key to this concept is managing efforts as an experiment so that learning follows from the results of an action; then plans for future actions are adjusted based on the knowledge gained from the initial experiment. Adaptive management allows forest managers and scientists to work in concert, and recognize and adapt to changing goals, knowledge, technology, and resource conditions.

Adaptive management has emerged in natural resource management recently because of the need to integrate management and science in an operational context, the need to integrate resource goals and objectives, and the realization that new management goals are sometimes being applied before adequate scientific knowledge is available.

Several opportunities for adaptive management identified for the Port Houghton/Cape Fanshaw project area resulted from the desire to decrease impacts to natural resources while continuing to harvest timber. Also recognized was the need to define some impacts (both beneficial and detrimental) whose effects have not yet been quantitatively established. Selection of appropriate silvicultural treatments is a concern expressed both by the public and the interdisciplinary team because effects of harvest are interrelated with other resource concerns. For that reason, an adaptive management approach was integrated into the overall silvicultural evaluation process for the project area early in the 1994 field season. It is a core tenet of both the proposed silvicultural treatments and the proposed alternatives as designed.

The main focus of adaptive management has been through silvicultural prescriptions. Proposed harvest treatments are viewed as working hypotheses to be tested and evaluated during and after the treatments are carried out. Where possible, these working hypotheses are to be tested in the same area to reduce the variation due to large-scale environmental or site differences. For example, two or more silvicultural systems or methods may be prescribed within the same harvest unit to provide a direct comparison of effects. These opportunities for adaptive management do not necessarily rely on scientific experiments and rigorous data collection, but they present adaptive management in an operational context. Nevertheless, partnerships between managers and scientists are extremely important if the full benefits of the process are to be realized.

Project Adaptive Management Opportunities for Silvicultural Systems

The adaptive management project opportunities for silvicultural systems include combinations of *clearcutting, clearcutting with reserves,* and *shelterwood with reserves* within harvest units. This allows for contrast of soil process and function, regeneration methods, species composition and control, wildlife habitats and species responses, windthrow effects, and economic costs.

Other adaptive management opportunities include prescribing a logging system that creates a substantial amount of soil disturbance in areas with potential for seeding of Sitka spruce and alder (refer to Appendix A). When feasible, other logging or silvicultural methods were incorporated in the same harvest unit. This prescription provides information on changes in site productivity, soil characteristics, timber production, and wildlife habitats.

When possible, action alternatives included group selection (tree harvesting in small groups of 2 acres or less) in visually sensitive areas. Visual quality would be evaluated following harvest for these areas *as well as in areas harvested by contrasting methods*. Resulting wildlife habitats, windthrow effects, and timber production would be evaluated in comparison with other methods.

Species in short supply would be planted. Some areas with Alaska yellow cedar and Sitka spruce are regenerating mostly to hemlock. Planting blocks within harvest units would be evaluated to contrast the results of planting versus not planting as a means of retaining scarce species in the new stand.

Best Management Practices (BMP)

BMPs are protection methods or measures designed to reduce or prevent water pollution and to minimize adverse impacts on water quality that are associated with a land-disturbing activity, such as timber harvest or road construction. BMPs are recognized by the Forest Service and the State as the primary mechanism for controlling nonpoint sources of pollution on National Forest System lands.

Through a Memorandum of Agreement (MOA) with the State of Alaska, the Forest Service is responsible for implementing BMPs and monitoring their effectiveness to assure compliance with the goals of the State's Water Quality Standards and the Clean Water Act. Both implementation and effectiveness monitoring occur on an on-going basis. Monitoring consists of field visits to a random sample of units and roads by hydrologists, soil scientists, sale administrators, engineers, and other resource professionals. Costs are variable and funding is part of routine work.

For this project, BMP monitoring would focus on timber and transportation-related activities. Specific activities to be monitored would include timber unit design and layout, timber yarding practices, stream course protection measures (including buffer strip design and layout), road location and design, road drainage structures and erosion control measures, landslide mitigation measures, and LTF operation and maintenance.

BMPs of importance to the project area regarding their effectiveness are described at the end of this section.

Implementation Monitoring

LTF Removal

LTF sites would be monitored at the completion of harvest operations to ensure that site restoration has occurred in compliance with contract specifications.

Eagle Nesting Habitat

Objective:	To ensure Forest Service maintains minimum 330-foot buffers around eagle nest locations or minimizes impacts to nest locations with approved variances.
Desired Result:	Protect eagle nest locations.
Measurement:	During sale implementation activities, observe eagle activities in nests close to logging camps and major road crossings, especially where variances to 330-foot minimum buffers were negotiated.
Threshold:	Management activities encroach on 330-foot minimum buffers or on trees with approved variances.
Corrective Action:	If it appears eagle nesting is disrupted because of management activities, consult with the USFWS to resolve potential problem.

Responsible Staff:	Sale administrator and wildlife specialist.
Record of Results:	Daily diaries of sales administrators, and memos of wildlife specialists recording findings at nest sites.
Annual Cost:	Ongoing activity for sale administration. Site visits by wildlife specialists would cost an estimated $4,000 per year during active logging operations.
FTE needs:	None

Beach Fringe, Estuary Fringe, and Riparian Habitat

Objective:	Avoid extending harvest units into beach or estuary fringe habitat. Ensure that travel corridors are protected.
Desired Result:	Avoid loss of wildlife habitat or other effects beyond the parameters of the preferred alternative.
Measurement:	Unit cards identify unit locations, noting if they are adjacent to protected travel corridors, estuaries, or beach fringes. If so noted, the units must not be enlarged in a manner that adversely affects these wildlife features. Twenty percent of units laid out each year will be spot-checked for conformance with unit card design guides.
Threshold:	None of the spot-checked units deviate from wildlife concerns stated on cards.
Corrective Action:	If landing or boundary locations are not feasible, the layout employee will contact a wildlife specialist and resolve desired changes at the time of layout. If still unresolved, bring to the District Ranger.
Responsible Staff:	Timber layout and sale administration employees.
Record of Results:	As-laid-out unit cards, as part of the pre-sale files.
Annual Cost:	Ongoing business; no additional funding needed.
Personnel Needs:	None

Effectiveness Monitoring

Timber Restocking

Objective:	To ensure that restocking occurs within minimum timeframes stated in National Forest Management Act (NFMA).
Desired Result:	Adequately restocked timber stands.
Measurement:	Stocking surveys at the first, third, or fourth year.
Evaluation:	Determination that stocking is adequate. Corrective action (i.e., planting) if natural regeneration is inadequate.
Responsible Staff:	Juneau and Petersburg Ranger District.
Record of Results:	Annual restocking report (NFMA).
Annual Cost:	Ongoing business. No additional funding needed.
Personnel Needs:	None

Site Utilization

Objective:	To ensure timber growth on highly productive sites is managed for future fiber production.
Desired Result:	On high-productivity site index sites, thin stands aged 15 to 20 years.
Measurement:	Conduct surveys of stands aged 10 to 12 years to identify and plan future thinning activities.
Evaluation:	Assess and document survey findings. Prioritize and program the best stands for thinning when they are 15 to 20 years old.
Responsible Staff:	Juneau and Petersburg Ranger District.
Record of Results:	Annual report of overall thinning and precommercial thinning (Supervisor's Office).
Annual Cost:	Ongoing business. No additional funding needed.
Personnel Needs:	None

LTF Bark Accumulation

This monitoring would determine the size of the area affected by bark deposition and bark depth. If LTF sites are implemented, they would be surveyed by divers as required in applicable state and federal permits.

Northern Goshawk

Objective:	Confirm that harvesting activities are not disturbing northern goshawks with known nests in the project area.
Desired Result:	Determine whether goshawks are able to tolerate and successfully breed in the project area with the ongoing timber harvest.
Measurement:	Confirm continued nesting activity and fledged young at known nest sites prior to, during, and following timber harvest.
Threshold:	Loss of adults or young.
Corrective Action:	If goshawks appear disturbed from the active timber harvest or do not appear to be successfully nesting, then harvest should be conducted outside the nesting season or avoided altogether, if necessary, in the vicinity of the nest.
Responsible Staff:	Chatham and Stikine Area wildlife biologists.
Record of Results:	Short reports for project files, regional wildlife biologists working with northern goshawks, USFWS, and ADF&G.
Annual Cost:	$4,000
Personnel Needs:	0.2 FTE

Cultural Resource Identification

Objective:	To ensure cultural resources are protected.
Desired Result:	Resolve conflicts between goal of protecting cultural resources and need for timber harvest, road construction, and LTF construction to conform to the National Historic Preservation Act as amended. Confirm that cultural resources are protected before operations begin.
Measurement:	Evaluate impacts on cultural resources discovered after the start of timber harvest, road building, or LTF construction.
Threshold:	Evidence of cultural materials discovered during operations.
Corrective Action:	Cultural resource specialist would ensure known sites are protected prior to implementing any land-disturbing activities. In the event of future discoveries, suspend activities until mitigation and protection measures are

designated jointly by cultural resources staff, State Historic Preservation Officer, the Advisory Council on Historic Preservation, and District Ranger.

Responsible Staff: Sale layout employees, engineering and road design employees, and field inspectors of timber sale operations. Cultural resource specialist is available for field inspection as needed.

Record of Results: New discoveries will be recorded in daily diaries of field inspectors. Cultural resource specialist will develop and maintain appropriate records for new discoveries brought to his or her attention.

Annual Cost: Ongoing business; no additional funding needed.

Personnel Needs: None

Cultural Resource Protection

Objective: To protect known and newly discovered cultural resource sites from vandalism.

Desired Result: Protect cultural resource sites inside the project area from vandalism.

Measurement: Periodic visits to known sites to ensure that they are not disturbed.

Evaluation: In the event of a disturbance, notify Forest Service archaeologist, District Ranger, and appropriate law enforcement personnel.

Responsible Staff: Sale administrators, engineering representatives, and cultural resource specialists.

Record of Results: Normally none, unless a violation occurs.

Annual Cost: $3,000

Personnel Needs: None

Post-Sale Road Use

Monitor road use following completion of harvest to determine whether Road Management Objectives (RMOs) for post-sale use are reflected by actual use, and to determine effects of post-sale use on resources.

Validation Monitoring

Alternative Silviculture

Objective:	To determine whether the two types of clearcuts and partial harvesting prescriptions, prescribed in this project for adaptive management, have been implemented and appear to be effective.
Desired Result:	The two types of clearcuts and partial cuts have been implemented and each type appears effective, to varying degrees, at maintaining green tree and snag densities and structure in the second-growth stand and at reducing the visual contrast between the clearcut and adjacent old growth.
Measurement:	Compare unit cards and silvicultural prescriptions with observations on the ground on 10 to 20 percent of the units. Prepare narrative description.
Evaluation:	Modify future unit prescriptions based on feedback obtained.
Responsible Staff:	Juneau and Petersburg Ranger District's staff and landscape architect.
Record of Results:	Memo documenting findings.
Annual Cost:	$3,000
Personnel Needs:	0.1 FTE

Salvage and Group Selection (Silviculture)

Objective:	Determine the effectiveness of salvage and group selection as silvicultural prescriptions.
Desired Result:	Residual trees are still standing and remain windfirm. Adequate regeneration is occurring in harvested patches.
Measurement:	Document the effect of opening stand on the windfirmness of residual trees. Measure stocking and species composition in harvested patches at first, third, or fourth years, and at approximately year 10.
Evaluation:	Evaluate the effectiveness of group selection as a viable silvicultural prescription on a forest-wide basis. Determine whether stocking in groups is adequate. Prescribe planting if natural regeneration is inadequate.
Responsible Staff:	District silviculturist.

Record of Results:	Memos documenting findings of random visits.
Annual Cost:	$2,500
Personnel Needs:	0.1 FTE

Visual Resources

Objective:	To assure mitigation techniques meet intent of reducing visual impacts and that the implemented plan meets Visual Quality Objectives.
Desired Result:	Apply mitigation measures of unit design and alternative silvicultural methods to reduce visual contrast created by logging operations. Design and locate LTF facilities to minimize visual impacts.
Measurement:	Viewsheds photographed from established viewpoints and compared to inventory photographs, as well as visual simulations. Viewsheds monitored intermittently during harvest and every five years thereafter. Monitor group selection and salvage areas to avoid too large a concentration of clearing areas.
Threshold:	Viewshed alteration exceeds impacts shown in visual simulations by ten percent.
Responsible Staff:	Landscape architect.
Record of Results:	Photographs from photopoints and written record.
Annual Cost:	$3,000
Personnel Needs:	None

Appendix F

Figures Supporting Subsistence

Appendix R

Figures Supporting Subsistence

Figure F-1

Reported Subsistence Deer Harvest in the Port Houghton/Cape Fanshaw Project Area

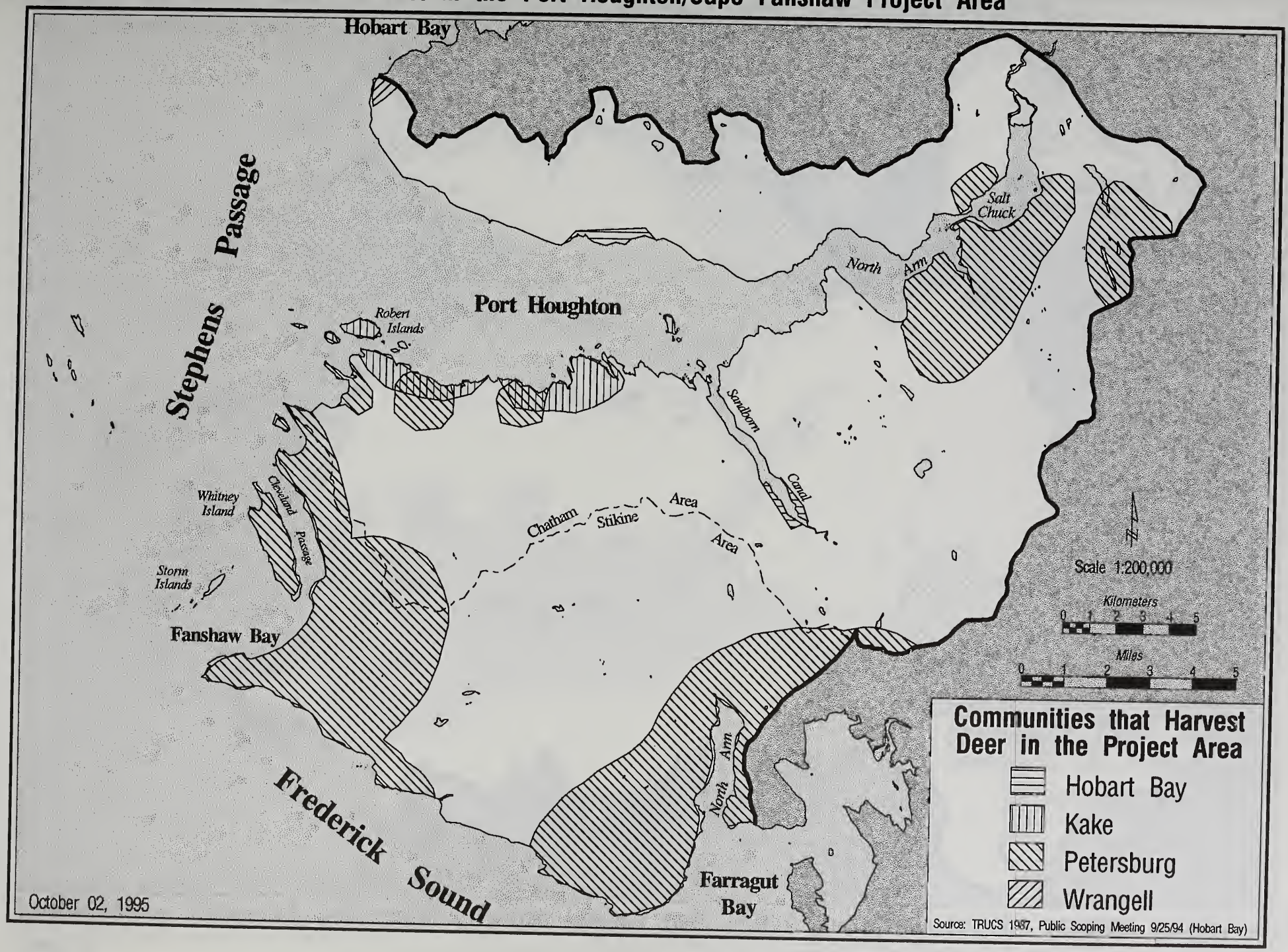


Figure F-2

Percentage of Petersburg Households Reported Hunting Deer in the Port Houghton/Cape Fanshaw Project Area

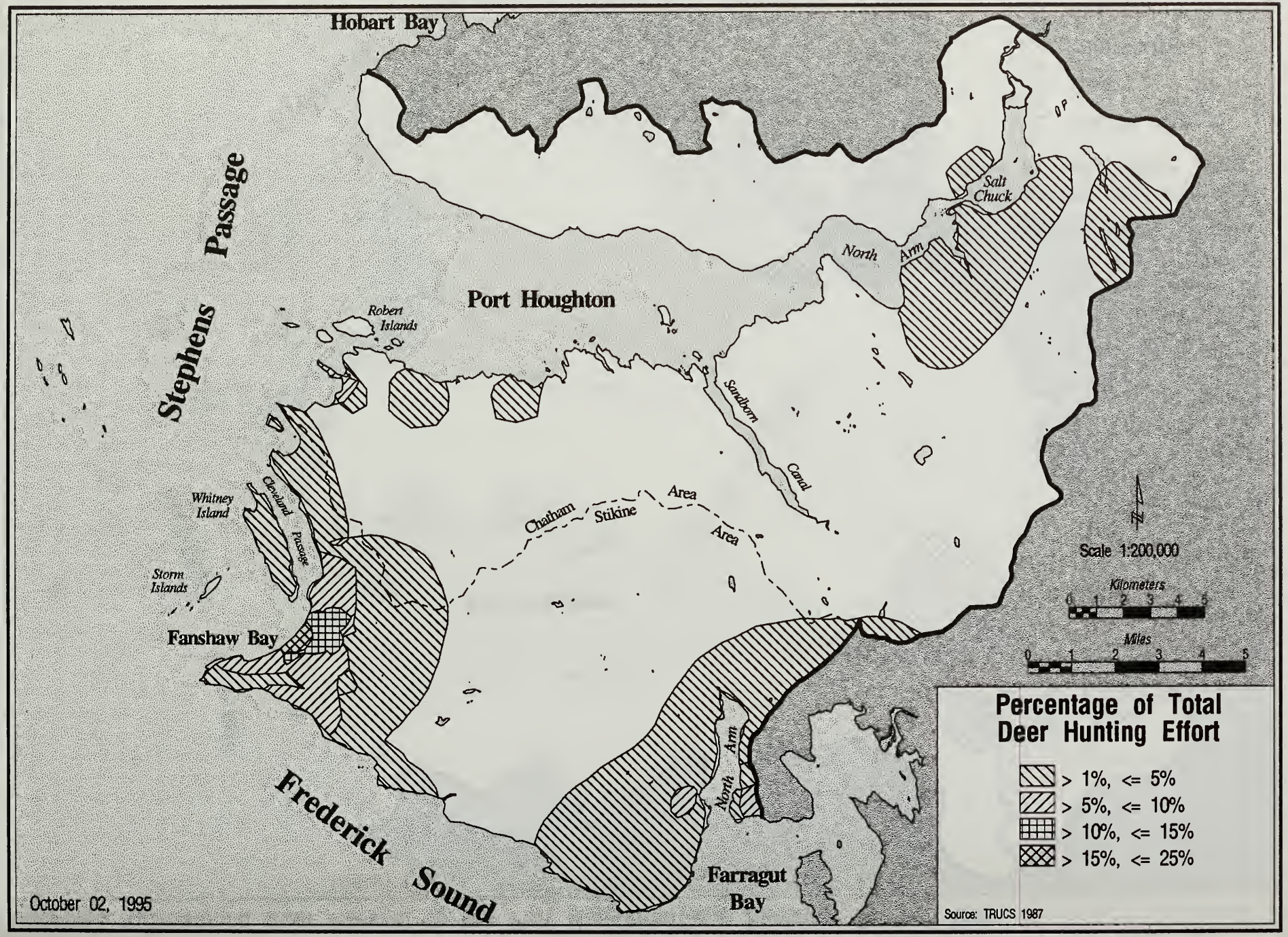


Figure F-3

Reported Non-commercial Salmon Harvest in the Port Houghton/Cape Fanshaw Project Area

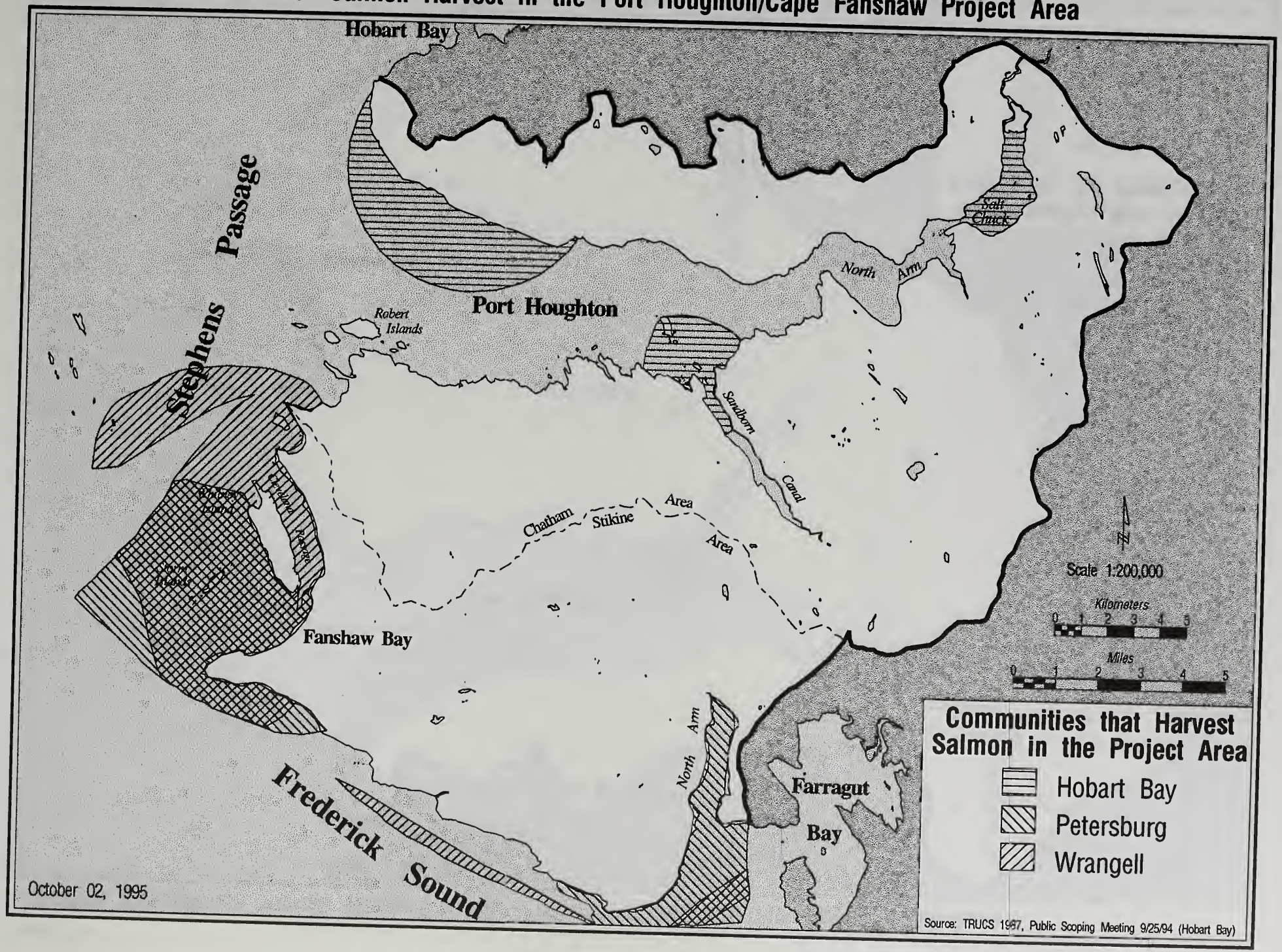


Figure F-4

Reported Subsistence Finfish Harvest in the Port Houghton/Cape Fanshaw Project Area

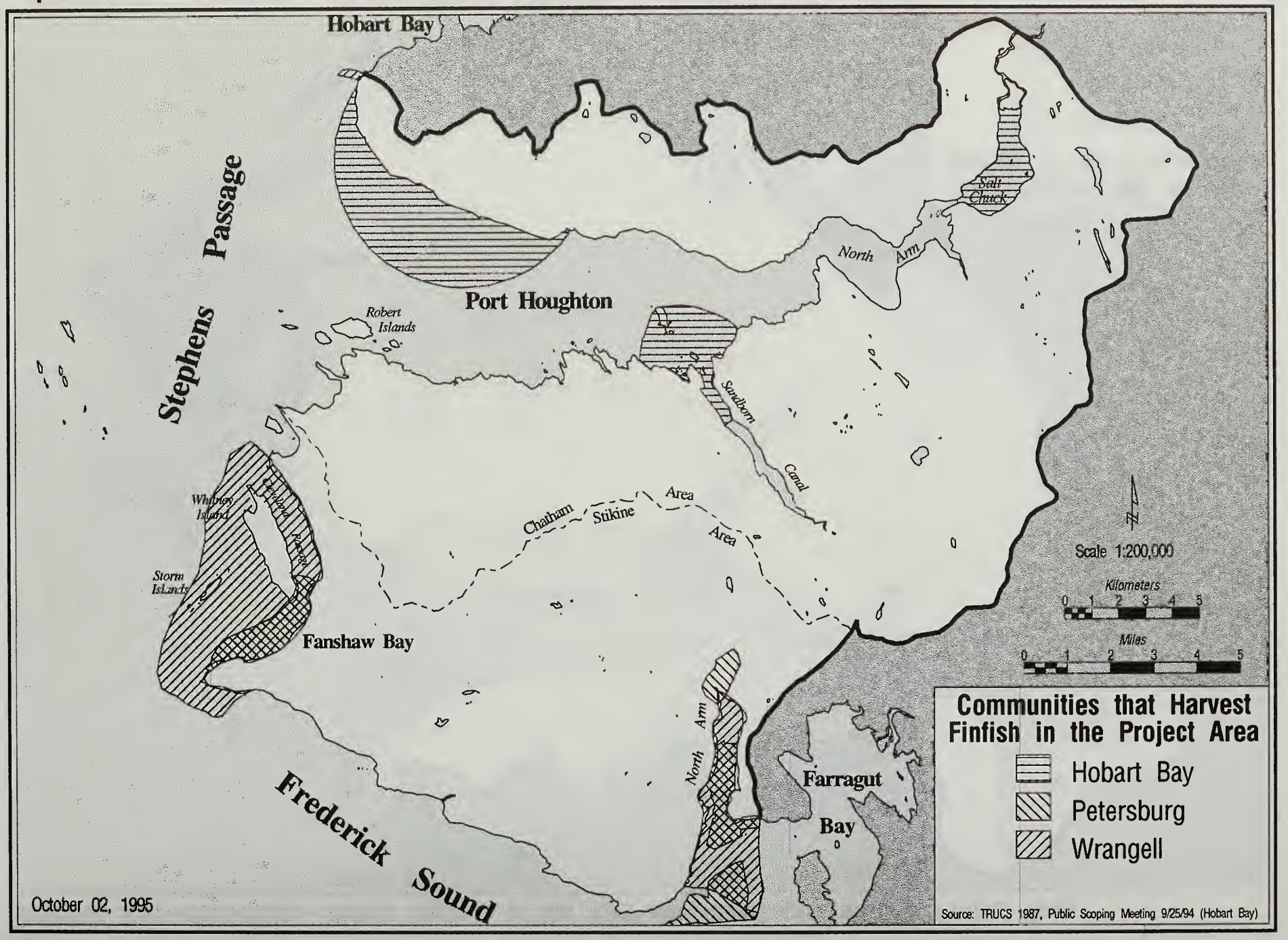


Figure F-5

Reported Subsistence Shellfish Harvest in the Port Houghton/Cape Fanshaw Project Area

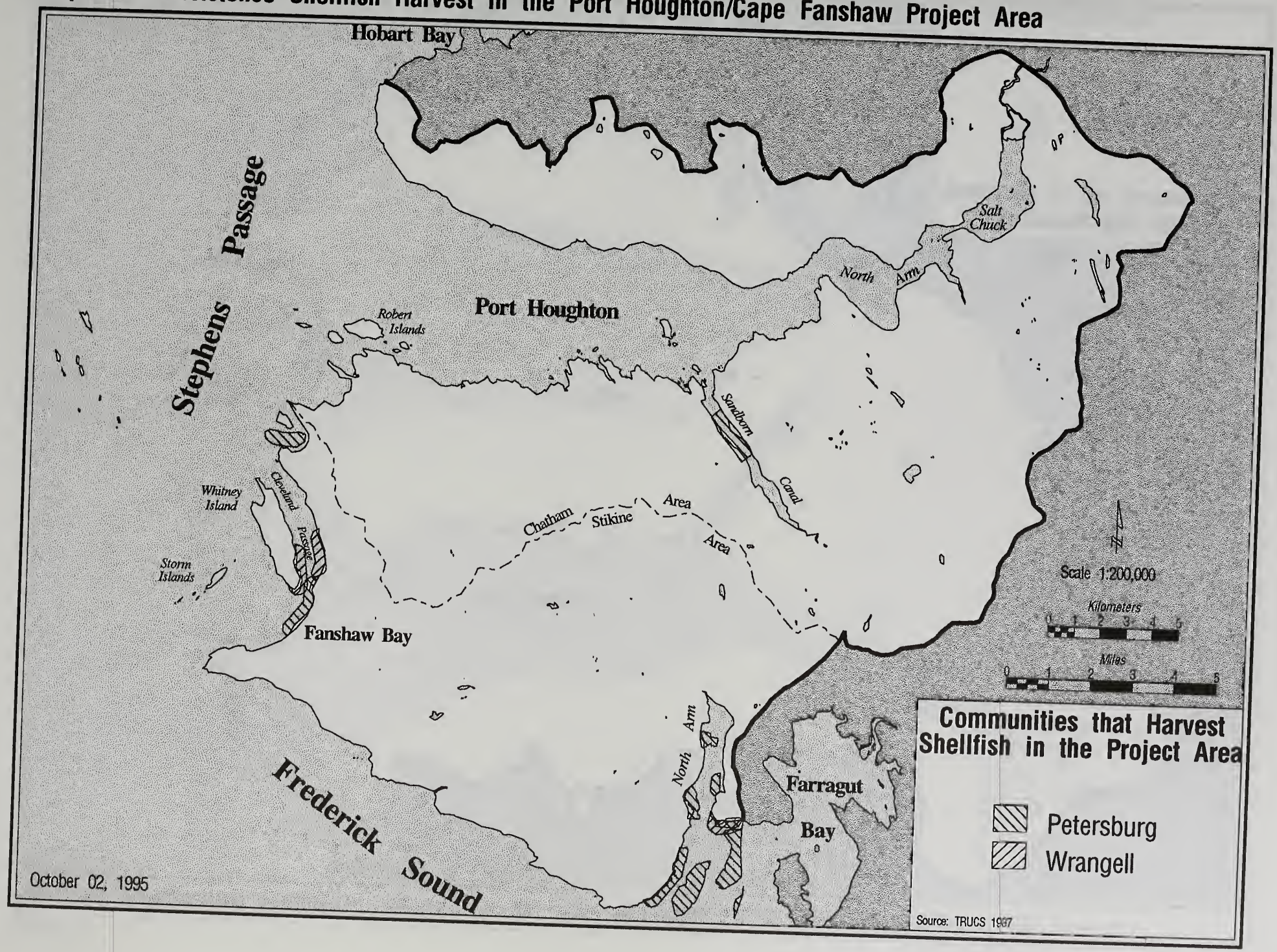


Figure F-6

Reported Subsistence Waterfowl Hunting in the Port Houghton/Cape Fanshaw Project Area

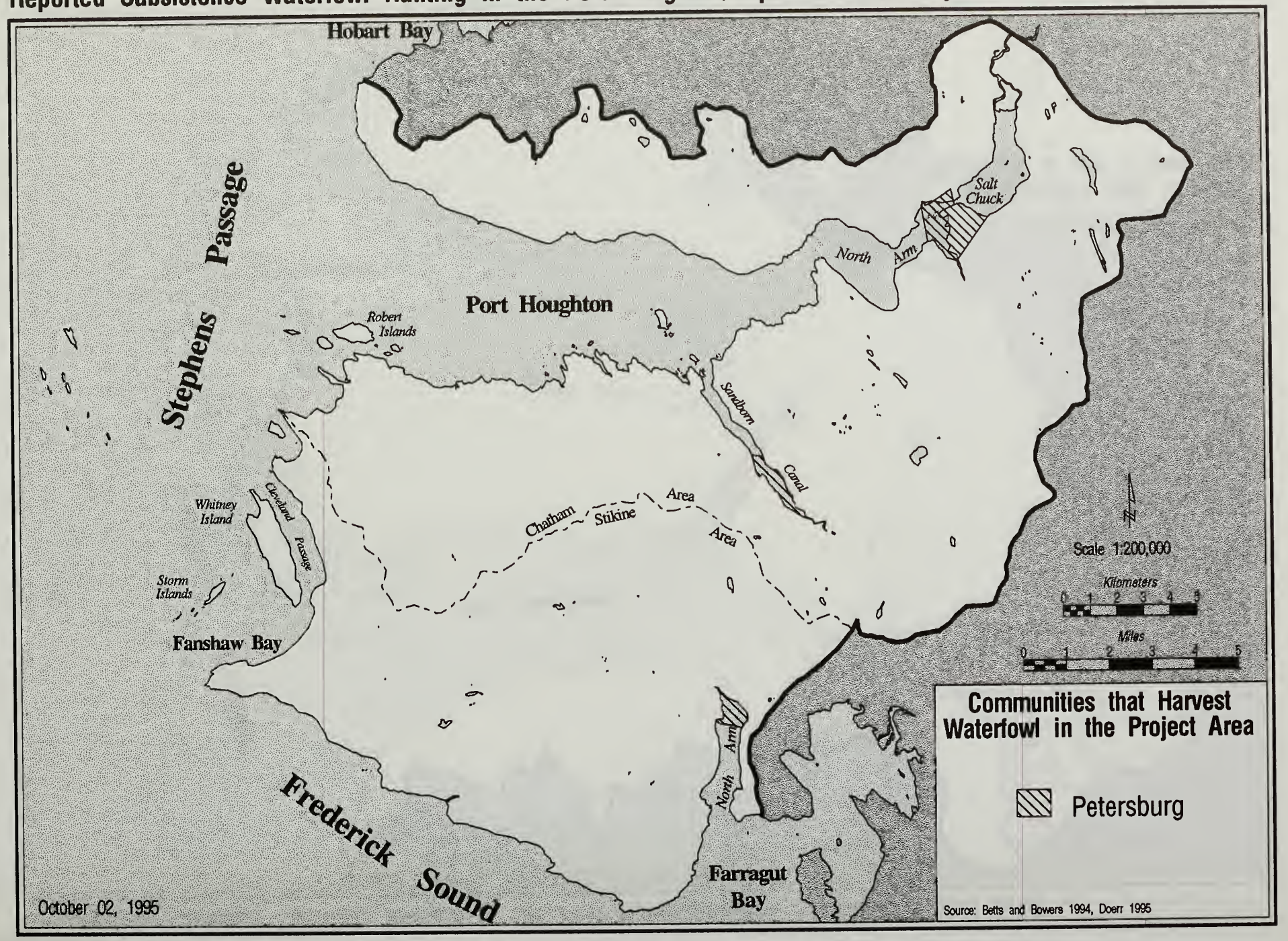


Figure F-7

Reported Furbearer Trapping in the Port Houghton/Cape Fanshaw Project Area

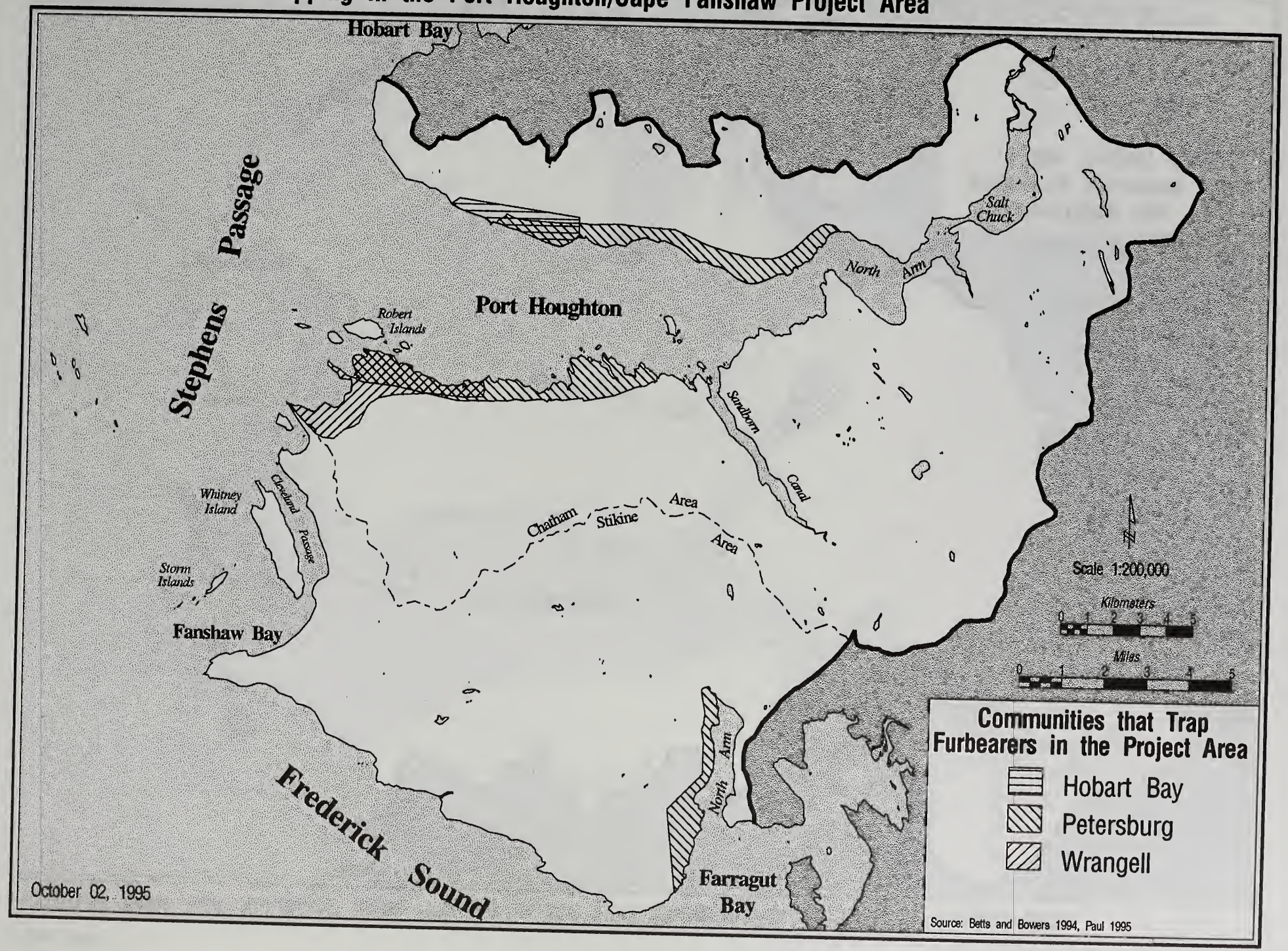


Figure F-8

Reported Bear and Mountain Goat Hunting in the Port Houghton/Cape Fanshaw Project Area

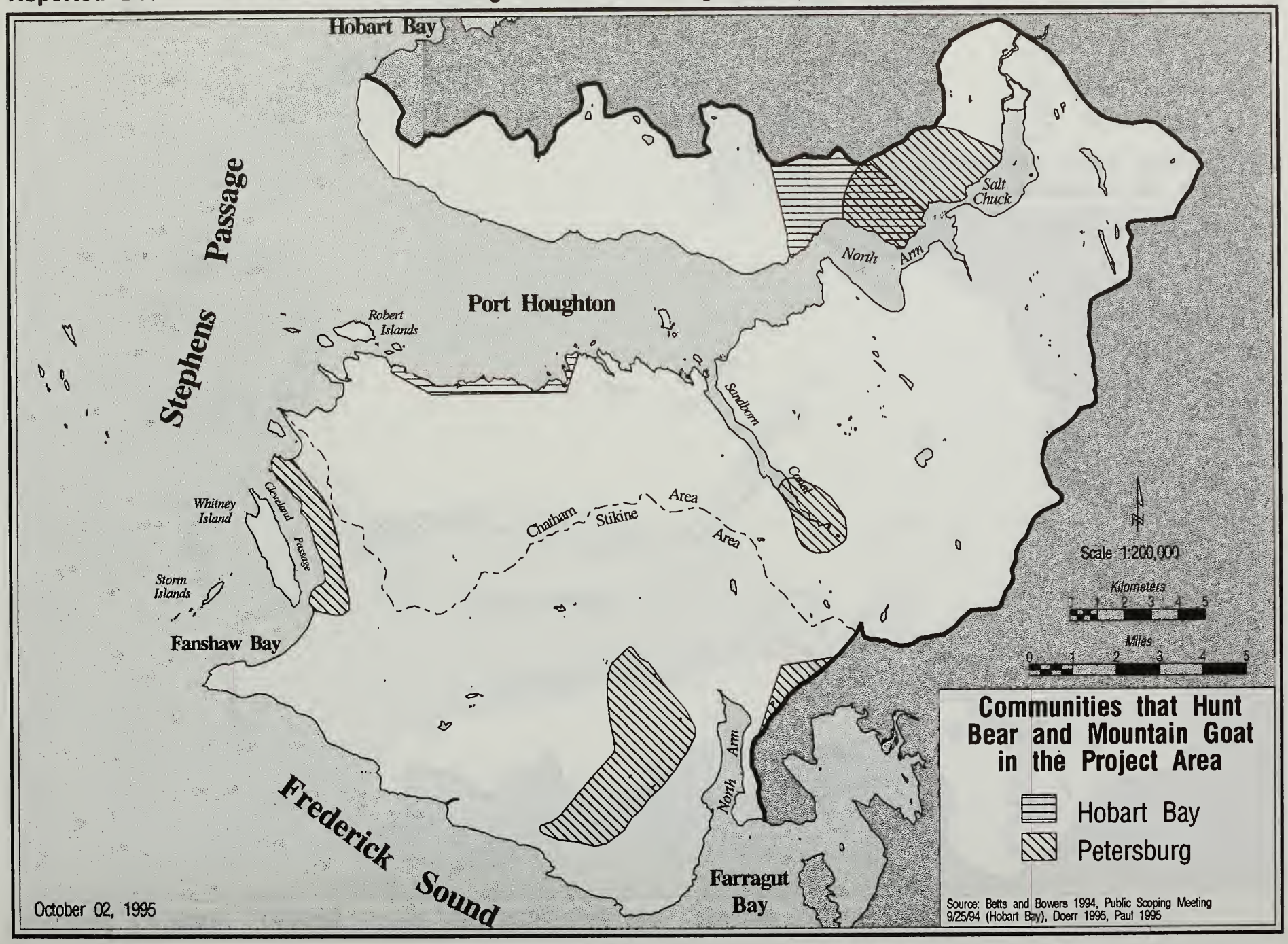


Figure F-9

Reported Harbor Seal Harvest in the Port Houghton/Cape Fanshaw Project Area

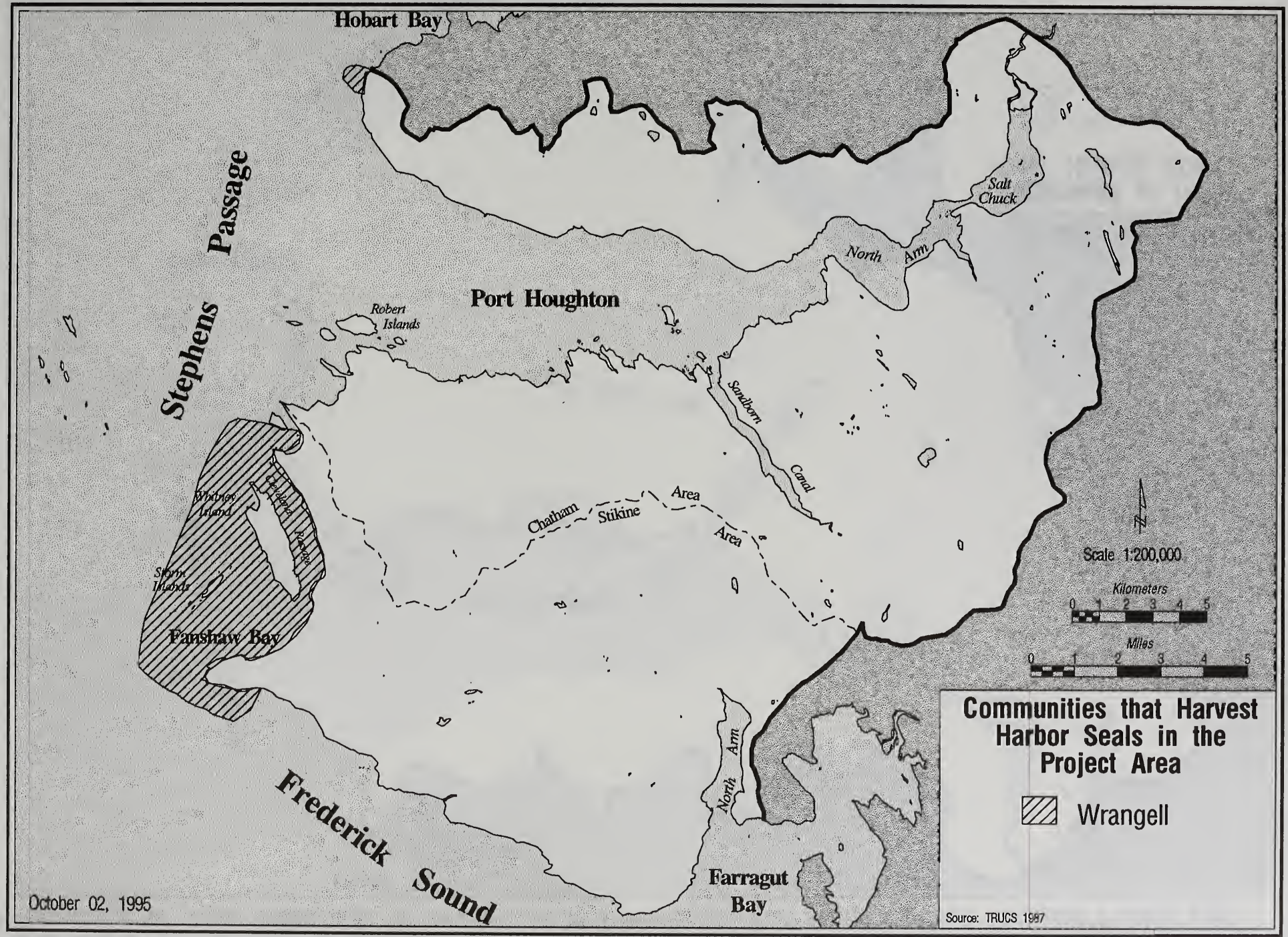
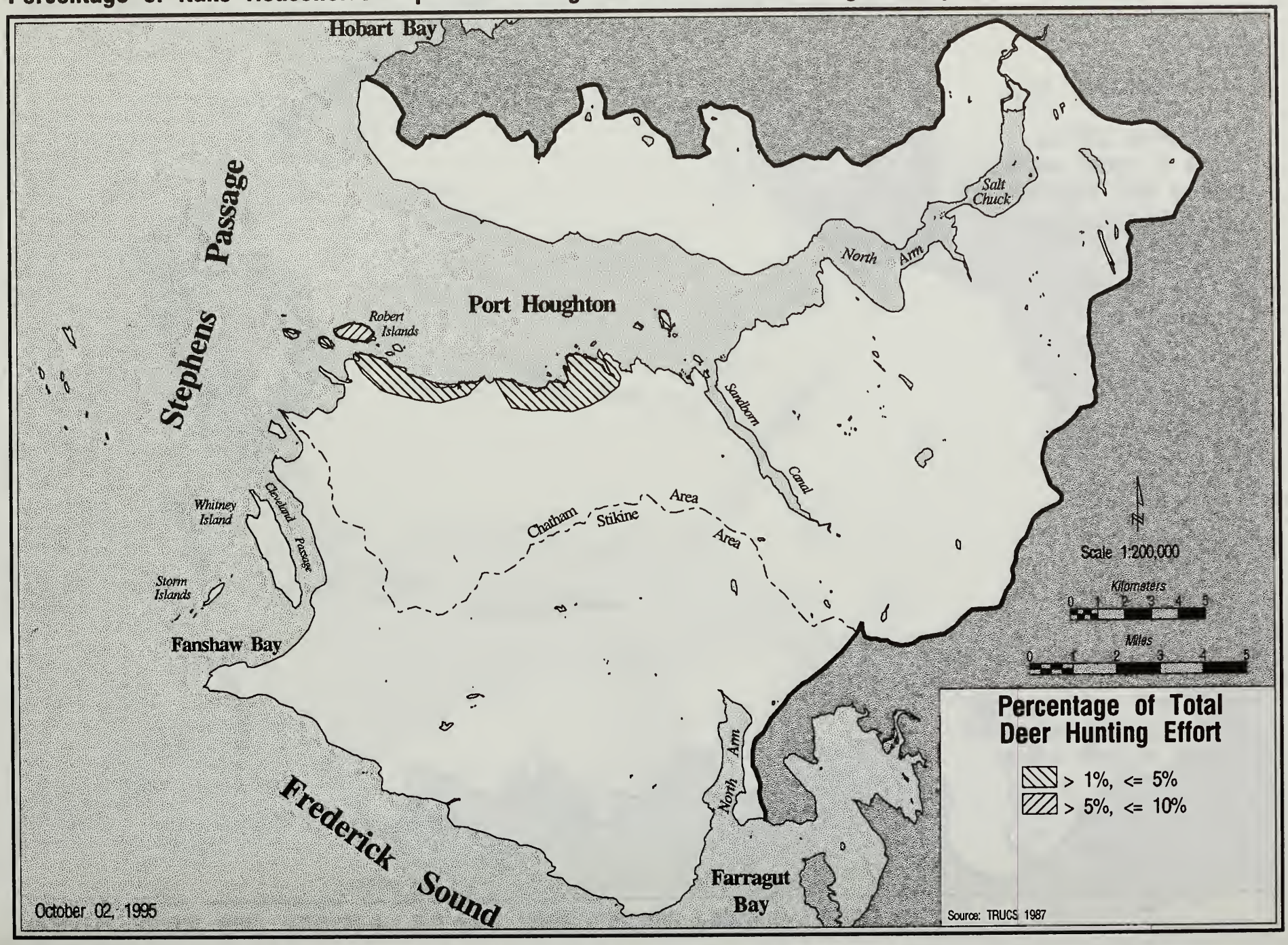


Figure F-10

Percentage of Kake Households Reported Hunting Deer in the Port Houghton/Cape Fanshaw Project Area



Appendix G

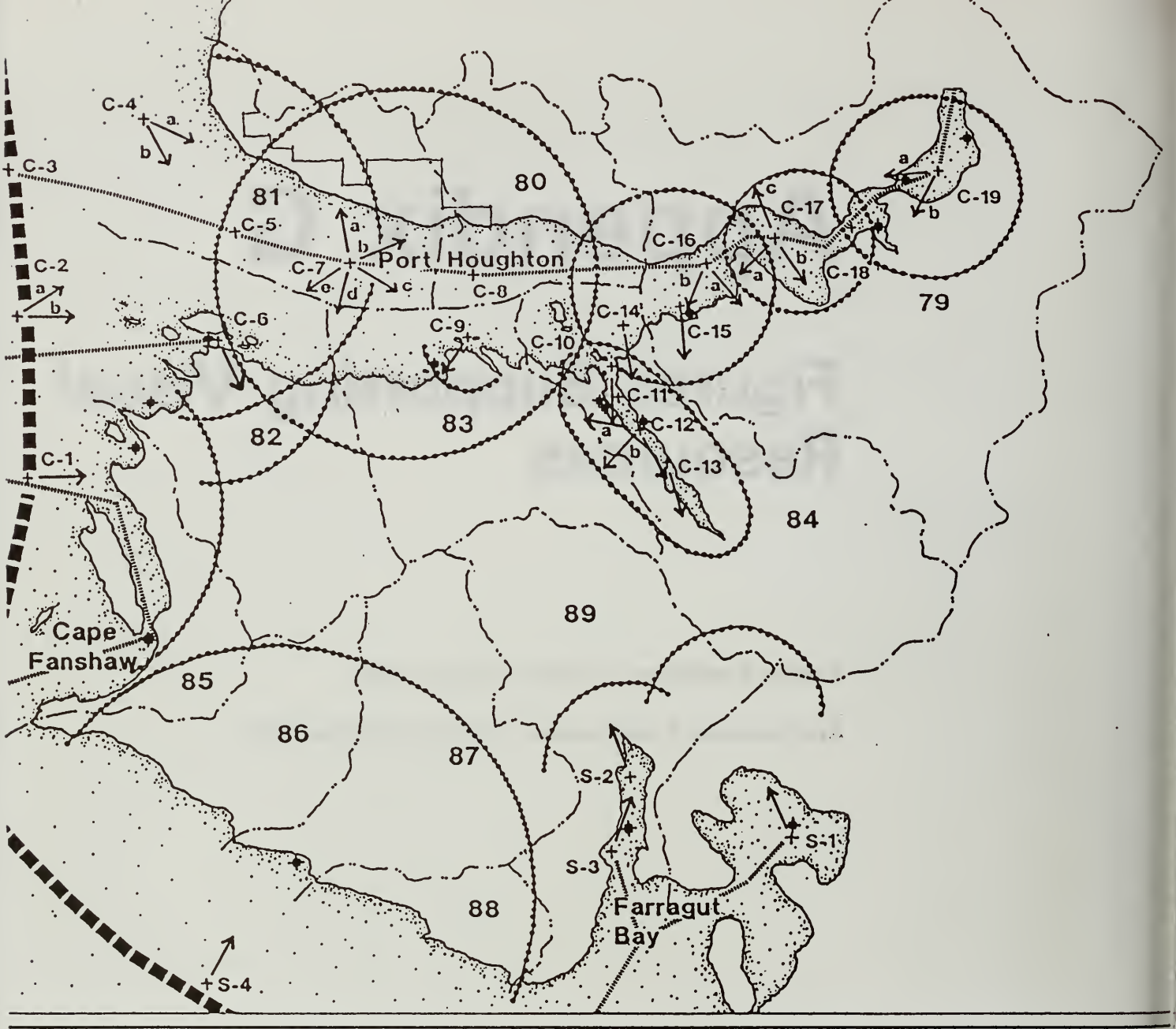
Figures Supporting Visual Resources

Appendix G

Figures Supporting Visual Resources

Existing Conditions are shown on Figures 1-30

Environmental Consequences are shown on Figures 31-67



0 1 2 3 kilometers

0 1 2 miles

North

Legend

- Water
- VCU Boundary
- 84 — VCU Number
- Viewpoint
- Alaska Marine Highway
- Small Boat Route
- Viewshed Boundary
- Recreation Site/Anchorage

Viewsheds and Viewpoints
for the Port Houghton/Cape Fanshaw
project area



Figure 1
Viewpoint S-1
Farragut Bay Viewshed
View looking north by northwest from Farragut Bay

Figure 2
Viewpoint S-2
North Arm Viewshed
View looking north by northwest from end of North Arm



Figure 3
Viewpoint S-3
North Arm Viewshed
View looking north by northeast from North Arm



Figure 4
Viewpoint S-4
Frederick Sound/Stikine Viewshed
View looking northeast from Alaska Marine Highway in Frederick Sound



Figure 5
Viewpoint C-1
Whitney Island Viewshed
View looking east from Alaska Marine Highway west of Whitney Island

Figure 6
Viewpoint C-2-a
Mouth of Port Houghton Viewshed
View looking northeast from Alaska Marine Highway at the mouth of Port Houghton

Figure 7
Viewpoint C-2-b
Mouth of Port Houghton Viewshed
View looking east from Alaska Marine Highway at the mouth of Port Houghton



Figure 8
Viewpoint C-4-a
Mouth of Port Houghton Viewshed
View looking east of southeast from small boat off of Point Hobart

Figure 9
Viewpoint C-4-b
Mouth of Port Houghton Viewshed
View looking southeast from small boat off of Point Hobart

Figure 10
Viewpoint C-6
Port Houghton Viewshed
View looking south by southeast from southeast shore of Robert Island

Figure 11
Viewpoint C-7-a
Port Houghton Viewshed
View looking north from small boat route in Port Houghton

Figure 12
Viewpoint C-7-b
Port Houghton Viewshed
View looking northeast from small boat route in Port Houghton

Figure 13
Viewpoint C-7-c
Port Houghton Viewshed
View looking southeast from small boat route in Port Houghton

Figure 14
Viewpoint C-7-d
Port Houghton Viewshed
View looking south by southwest from small boat route in Port Houghton



Figure 15
Viewpoint C-7-e
Port Houghton Viewshed
View looking southeast from small boat route in Port Houghton

Figure 16
Viewpoint C-9
Port Houghton Viewshed
View looking southeast from small boat off south shore of Port Houghton, west of Sandborn Canal



Figure 17
Viewpoint C-10
Sandborn Canal
View looking south from small boat at mouth of Sandborn Canal

Figure 18
Viewpoint C-12-a
Sandborn Canal
View looking west from small boat in Sandborn Canal



Figure 19
Viewpoint C-12-b
Sandborn Canal
View looking southwest from small boat in Sandborn Canal

Figure 20
Viewpoint C-12-c
Sandborn Canal
View looking south by southeast from small boat in Sandborn Canal



Figure 21
Viewpoint C-13
Sandborn Canal
View looking south by southeast from small boat at end of Sandborn Canal

Figure 22
Viewpoint C-14
Inner Port Houghton Viewshed
View looking south from small boat off the south shore of Port Houghton, east of Sandborn Canal



Figure 23
Viewpoint C-15
Inner Port Houghton Viewshed
View looking west from small boat in Sandborn Canal

Figure 24
Viewpoint C-16-a
Inner Port Houghton Viewshed
View looking south by southwest from small boat route in Port Houghton, east of Sandborn Canal



Figure 25
Viewpoint C-16-b
Inner Port Houghton Viewshed
View looking south by southeast from small boat route in Port Houghton, east of Sandborn Canal



Figure 26
Viewpoint C-17-a
Salt Chuck Antechamber Viewshed
View looking southwest from small boat route in Port Houghton, east of North Point



Figure 27
Viewpoint C-17-b
Salt Chuck Antechamber Viewshed
View looking south by southeast from small boat route in Port Houghton, east of North Point



Figure 28
Viewpoint C-17-c
Salt Chuck Antechamber Viewshed
View looking north by northwest from small boat route in Port Houghton, east of North Point



Figure 29
Viewpoint C-19-a
Salt Chuck Viewshed
View looking west from small boat route in the Salt Chuck



Figure 30
Viewpoint C-19-b
Salt Chuck Viewshed
View looking southwest from small boat route in the Salt Chuck

Summary of Figures
Visual Simulations Grouped by Viewshed

Farragut Bay Viewshed
No simulations because no discernible change results from any of the action alternatives.

Figure 1 - North Arm Viewshed and Viewpoints
The North Arm Viewshed is seen from viewpoints S-2 and S-3.

Figure 2 - Visual Simulation of Alternative B from Viewpoint S-2
Alternative B would result in the most visual change and was therefore selected for simulation. To a lesser degree, Alternative C, D and E would have impacts similar to Alternative B.

Figure 3 - Visual Simulation of Alternative C from Viewpoint S-3
Alternative C was selected for simulation because it would result in the most visual change of any of the Alternatives. Under Alternative B and D, visual change would not be discernible from this viewpoint. Alternative D would result in impacts similar to Alternative C.

Figure 4 - Frederick Sound. Viewshed and Viewpoints
The Frederick Sound/Stikine Viewshed is seen from Viewpoint S-4

Figure 5- Visual Simulation of Alternative B from Viewpoint S-4
Alternative B was selected for simulation because it would result in the most visual change of any of the Alternatives. All action alternatives would result in impacts similar to Alternative B.

Figure 6 - Whitney Island Viewshed and Viewpoints
The Whitney Island Viewshed is seen from Viewpoint C-1

Figure 7 - Visual Simulation of Alternative C from Viewpoint C-1
Alternative C as selected for simulation because it would result in the most visual change of any of the Alternatives. Alternative B and D would result in lesser impact than Alternative C. Alternative E would have the same effect as the no-action alternative.

Figure 8 - Mouth of Port Houghton Viewshed and Viewpoints
The Mouth of Port Houghton Viewshed is seen from Viewpoints C-2, C-3 and C-4. Visual simulations were created for only Viewpoint C-2 because it would be representative of the impacts as seen from all of the viewpoints.

Figure 9 - Visual Simulation of Alternative C from Viewpoint C-2-a
Alternative C was selected for simulation because it would result in visual change that is representative of all the action alternatives, except E. Alternative E would have the same effect as the no-action alternative.

Figure 10 - Visual Simulation of Alternative D from Viewpoint C-2-b
Alternative D was selected for simulation because it would result in visual change that is representative of all the action alternatives.

Figure 11 - Port Houghton Viewshed and Viewpoints
The Port Houghton Viewshed can be seen from Viewpoints C-5, C-6, C-7, C-8 and C-9. Visual simulations were created for Viewpoint C-6 and C-7. C-6 was selected because it is potentially the site of a marine park; C-7 was selected because it would be representative of the impacts as seen from the C-5 and C-8. Foreground trees would screen impacts to viewers at Viewpoint C-9; therefore, visual simulations were not created for C-9.

Figure 12 - Visual Simulation of Alternative C from Viewpoint C-6
Alternative C was selected for simulation because it would result in the most visual change. Alternative B would be similar to Alternative C. No changes to the existing condition would be apparent in Alternative D and E.

Figure 13 - Visual Simulation of Alternative C from Viewpoint C-7-a
Figure 14 - Visual Simulation of Alternative D from Viewpoint C-7-a
Visual simulations to compare impacts resulting from Alternatives C and D. Alternative B and E would not result in change to the existing view from Viewpoint C-7-a.

Figure 15 - Visual Simulation of Alternative B from Viewpoint C-7-b
Alternative B was selected for simulation at this viewpoint because it would result in visual change that is representative of action alternatives except E. Alternative E would not result in change to the existing view from Viewpoint C-7-b.

Figure 16 - Visual Simulation of Alternative B from Viewpoint C-7-c
Figure 17 - Visual Simulation of Alternative E from Viewpoint C-7-c
Visual simulations to compare impacts that would result from Alternatives B and E. Alternatives C and D would be similar to B.

Figure 18 - Visual Simulation of Alternative B from Viewpoint C-7-d
Figure 19 - Visual Simulation of Alternative D from Viewpoint C-7-d
Figure 20 - Visual Simulation of Alternative E from Viewpoint C-7-d
Visual simulations to compare impacts that would result from Alternatives B, D, and E. Alternative C would be similar to B.

Figure 21 - Visual Simulation of Alternative C from Viewpoint C-7-e
Figure 22 - Visual Simulation of Alternative D from Viewpoint C-7-e
Visual simulations to compare impacts that would result from Alternatives C and D. Alternative B would be similar to D. Alternative E would not result in change to the existing view from Viewpoint C-7-e.

Figure 23 - Sandborn Canal Viewshed and Viewpoints
The Sandborn Canal Viewshed can be seen from Viewpoints C-10, C-11, C12 and C-13. Visual simulations were created for Viewpoint C-10, C-12 and C-13. The impacts to C-11 would be similar to those for C-12.

Figure 24 - Visual Simulation of Alternative E from Viewpoint C-10
Figure 25 - Visual Simulation of Alternative E from Viewpoint C-12
Figure 26 - Visual Simulation of Alternative E from Viewpoint C-13
Alternative E was selected for visual simulation because it is the only alternative that would create changes significantly affecting the view in this viewshed.

Figure 27 - Inner Port Houghton Viewshed and Viewpoints
The Inner Port Houghton Viewshed can be seen from Viewpoints C-14, C-15 and C-16. The views from Viewpoints C-14 and C-15 would be very similar, so visual simulations were created for only C-14 and C-16.

Figure 28 - Visual Simulation of Alternative B from Viewpoint C-14.
Alternative B was selected for simulation because it would be representative of the impacts resulting from both B and C. Alternative D and E would have no impacts from this viewpoint.

Figure 29 - Visual Simulation of Alternative B from Viewpoint C-16-a
Figure 30 - Visual Simulation of Alternative C from Viewpoint C-16-a
Figure 31 - Visual Simulation of Alternative D from Viewpoint C-16-a
Visual simulations to compare impacts that would result from Alternatives B, C and D. Alternative E would not result in change to the existing view in this viewshed.

Figure 32 - Visual Simulation of Alternative B from Viewpoint C-16-b
Figure 33 - Visual Simulation of Alternative D from Viewpoint C-16-b
Visual simulations to compare impacts that would result from Alternatives B and D. Alternative C would be similar to Alternative B. Alternative E would not result in change to the existing view in this viewshed.

Figure 34 - Salt Chuck Antechamber Viewshed and Viewpoints
This viewshed is seen from Viewpoint C-17

Figure 35 - Visual Simulation of Alternative C from Viewpoint C-17-a
Figure 36 - Visual Simulation of Alternative D from Viewpoint C-17-a
Visual simulations to compare impacts that would result from Alternatives C and D. Alternatives B and E would not result in change to the existing view in this viewshed.

Figure 37 - Visual Simulation of Alternative D from Viewpoint C-17-b
Alternative D was selected for visual simulation because it is the only alternative that would create changes affecting the view from C-17-b.

Salt Chuck Viewshed and Viewpoints
No simulations because no discernible change results from any of the action alternatives.

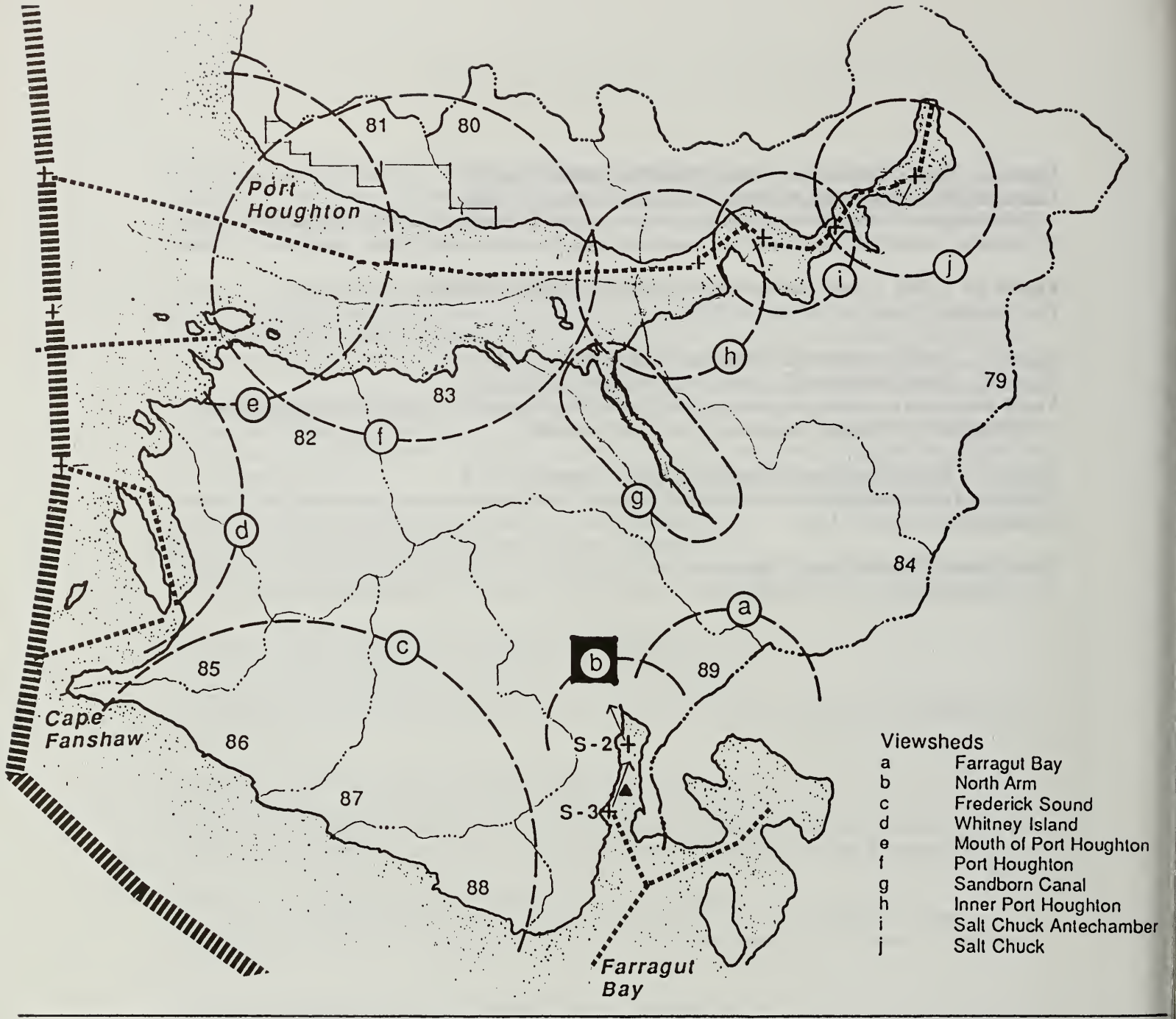


Figure 31.
North Arm Viewshed and Viewpoints

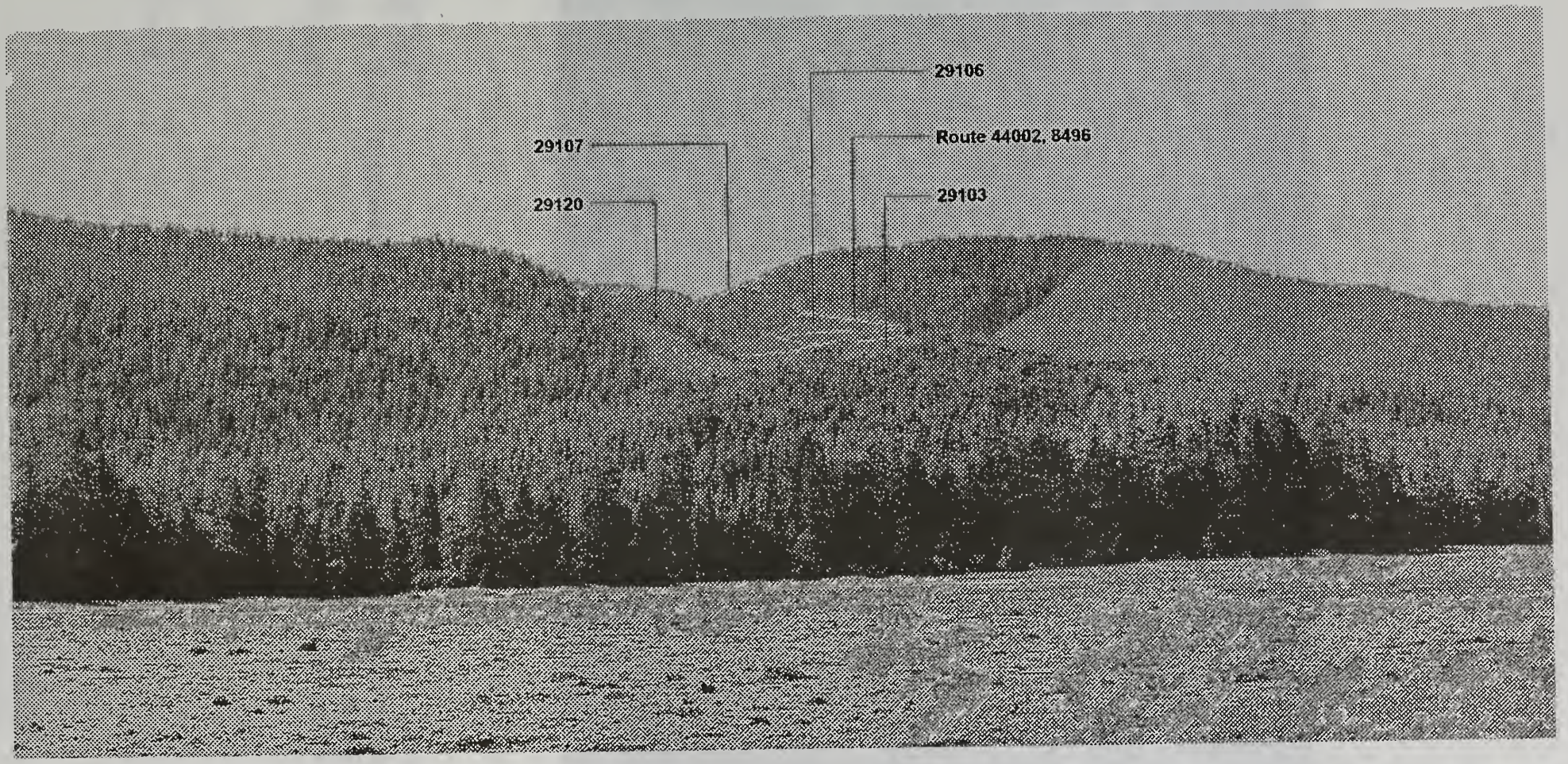


Figure 32.
Visual Simulation of Alternative B from Viewpoint S-2 North Arm Viewshed
View looking north by northwest from end of North Arm

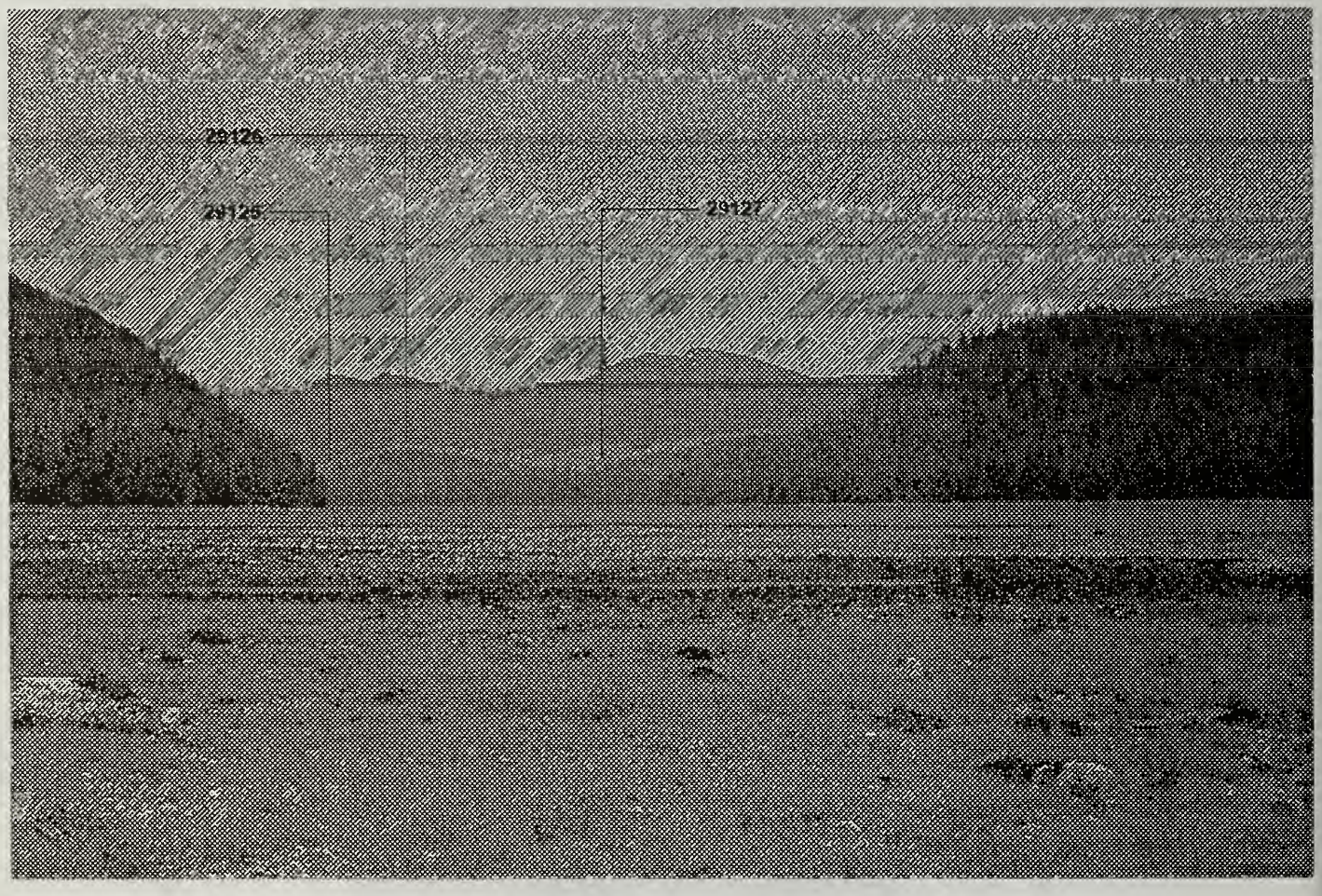
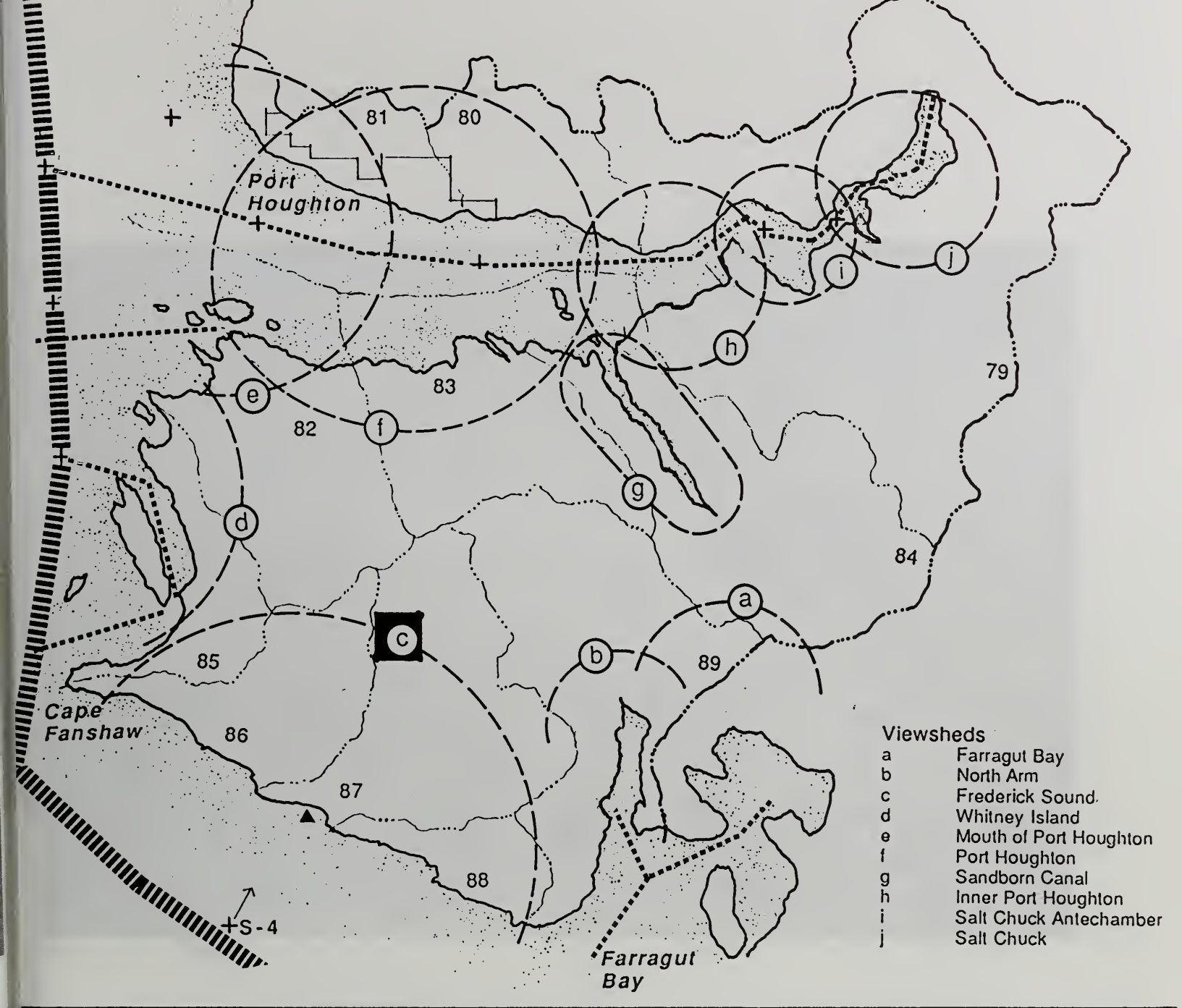


Figure 33.
Visual Simulation of Alternative C from Viewpoint S-3 North Arm Viewshed
View looking north by northeast from North Arm



kilometers
0 1 2 3

miles
0 1 2

North

Legend

- Water
- VCU Boundary
- Viewpoint
- Viewshed
- Alaska Marine Highway
- Small Boat Route
- Recreation Site
- VCU Number (80)

Figure 34.
Fredrick Sound/Stikine Viewshed and Viewpoints

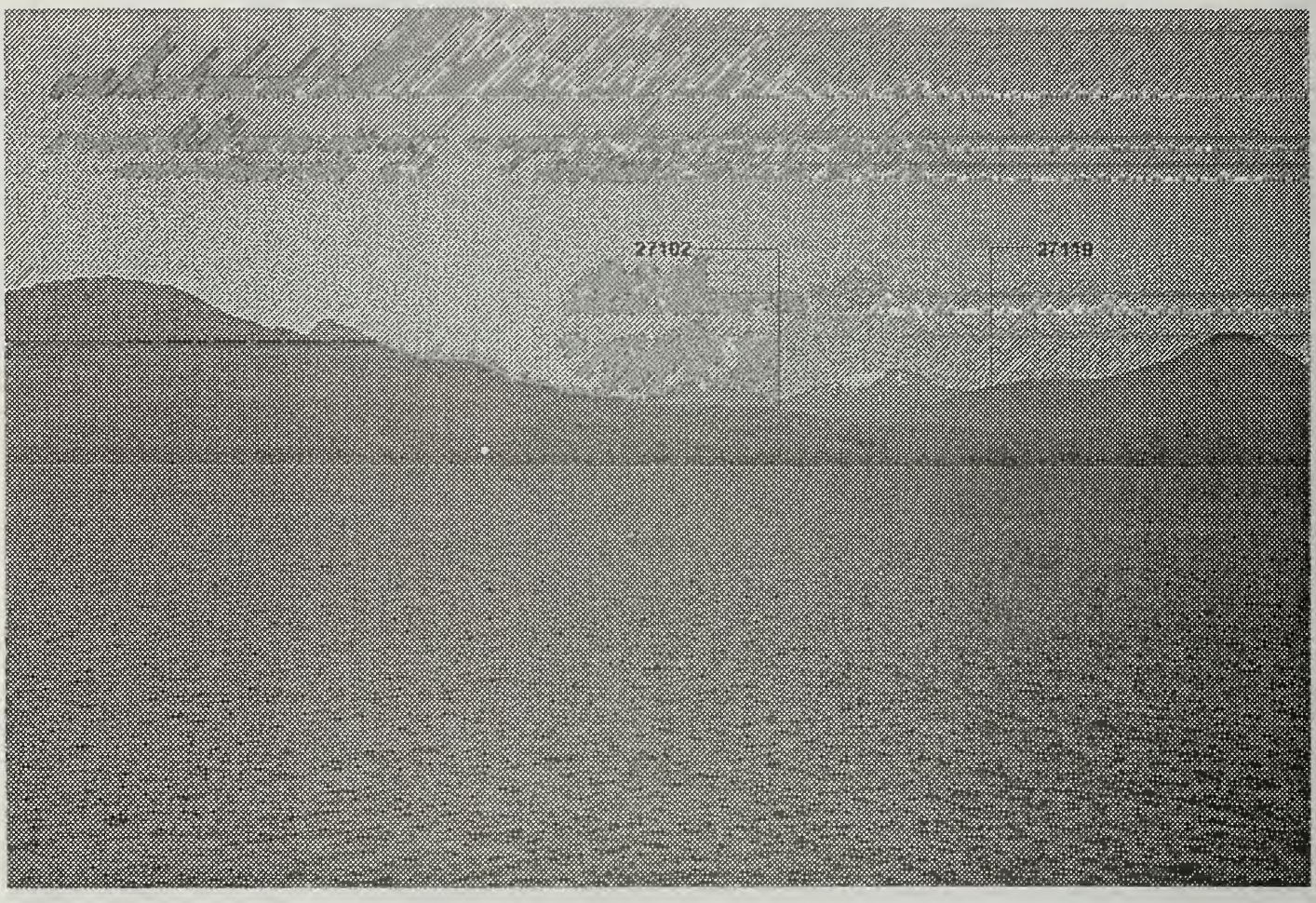
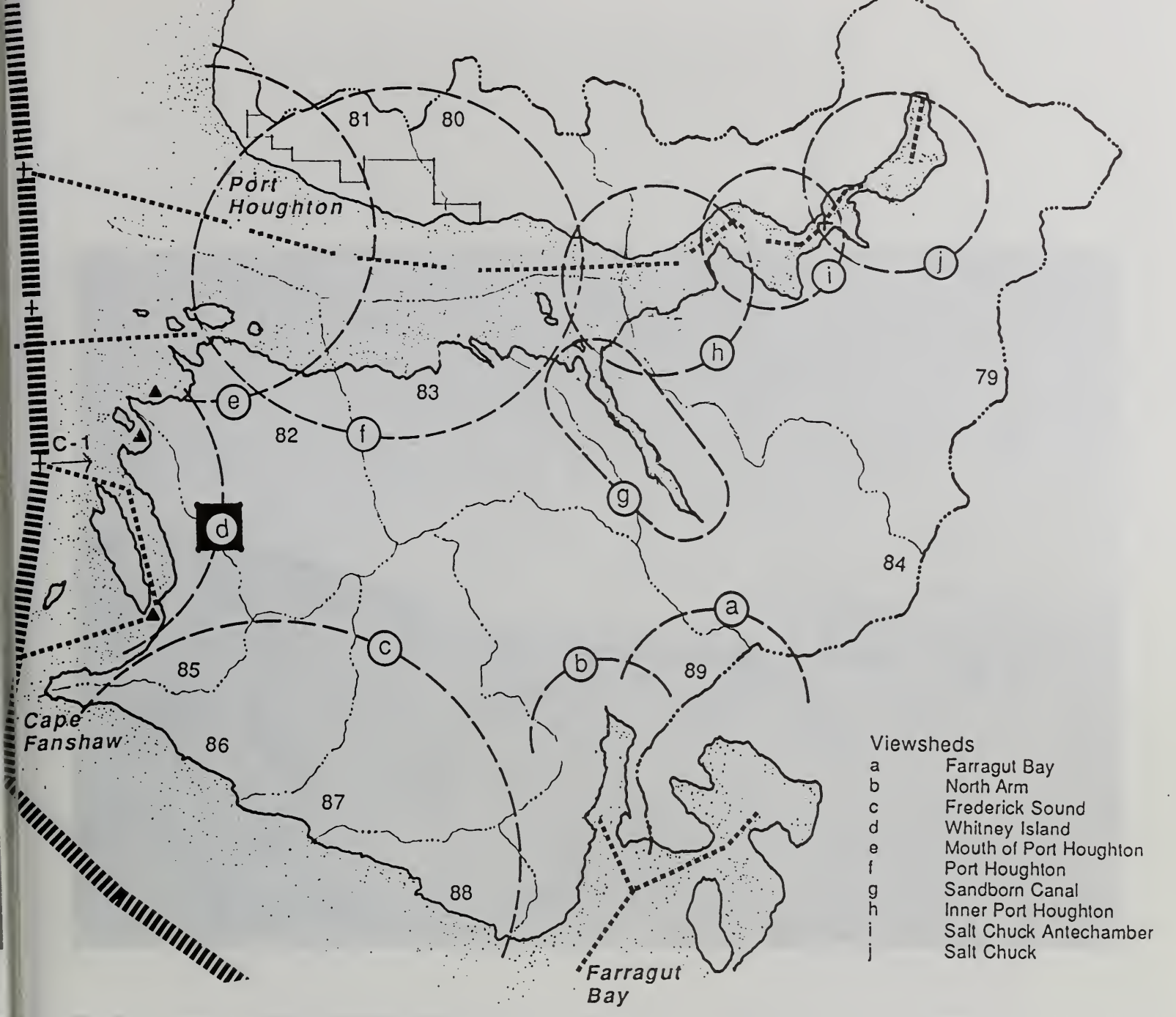


Figure 35.
Visual Simulation of Alternative B from Viewpoint S-4
Frederick Sound/Stikine Viewshed
View looking northeast from Alaska Marine Highway



kilometers
0 1 2 3

miles
0 1 2

North

Legend

- Water
- VCU Boundary
- Viewpoint
- Viewshed
- Alaska Marine Highway
- Small Boat Route
- Recreation Site
- VCU Number (80)

Figure 36.
Whitney Island Viewshed and Viewpoints

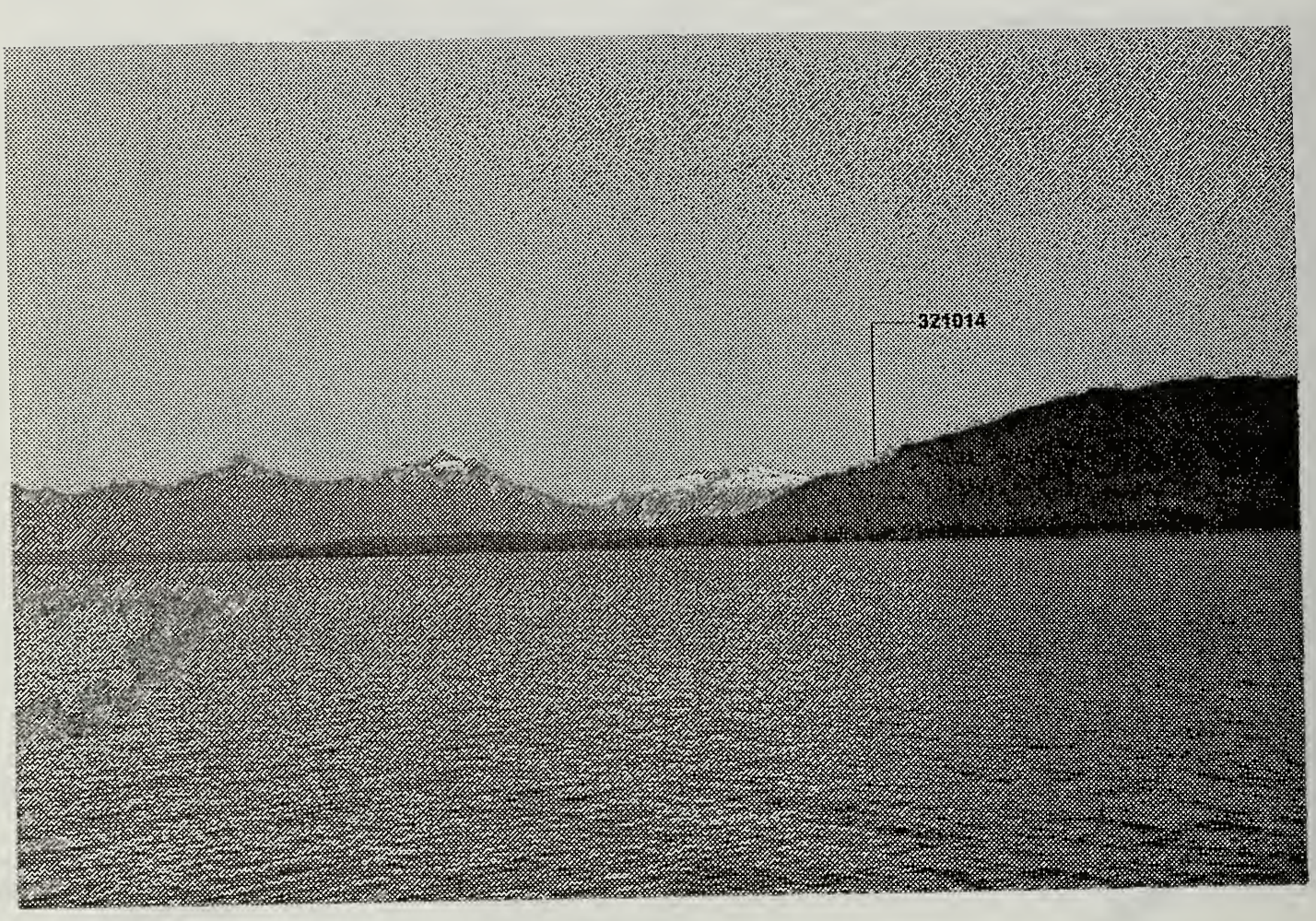
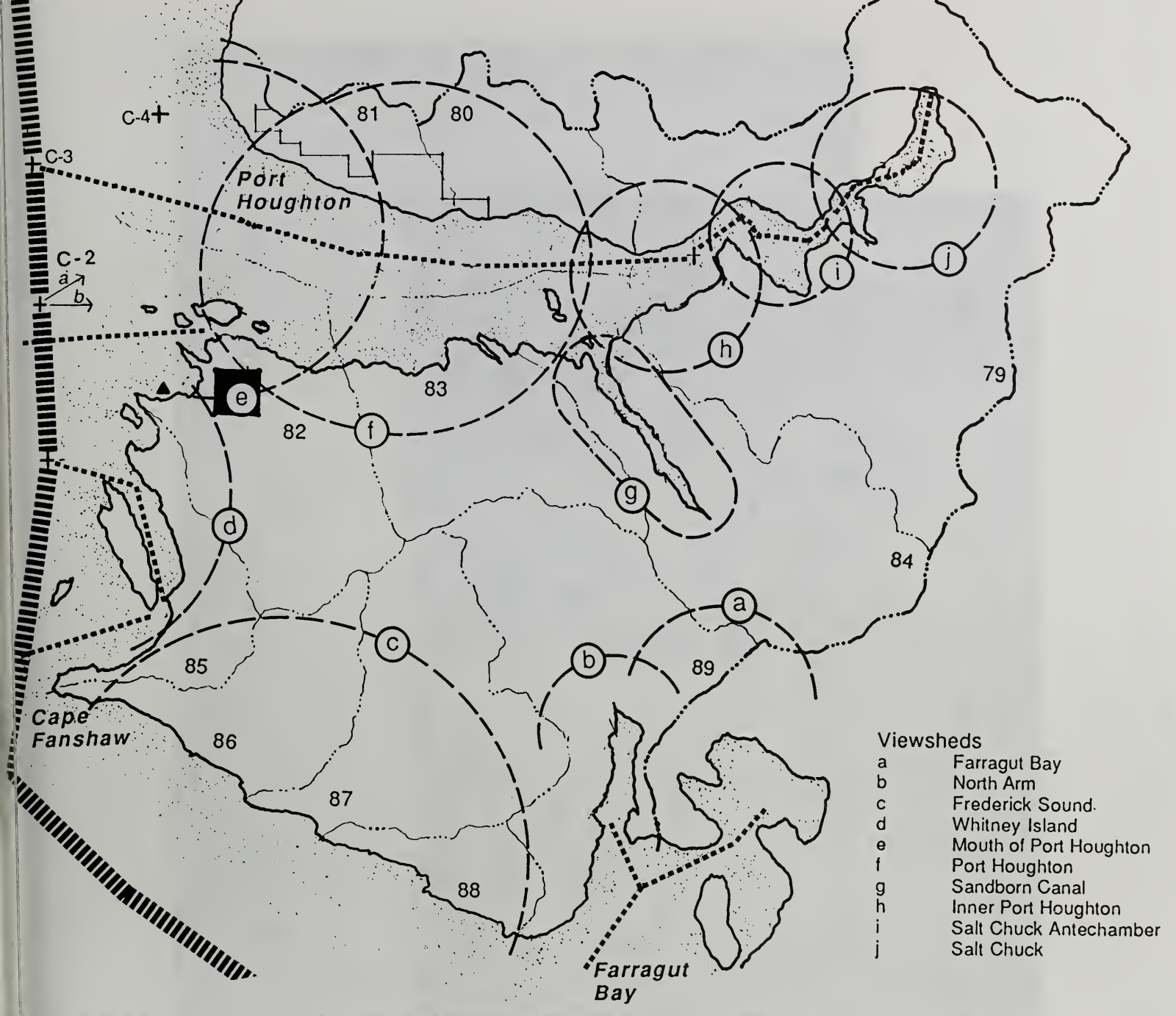


Figure 37.
Visual Simulation of Alternative C from Viewpoint C-1
Whitney Island Viewshed
View looking east from Alaska Marine Highway



kilometers
0 1 2 3

miles
0 1 2

North

Legend

- Water
- VCU Boundary
- Viewpoint
- Viewshed
- Alaska Marine Highway
- Small Boat Route
- Recreation Site
- VCU Number (80)

Figure 38.
Mouth of Port Houghton Viewshed and Viewpoints

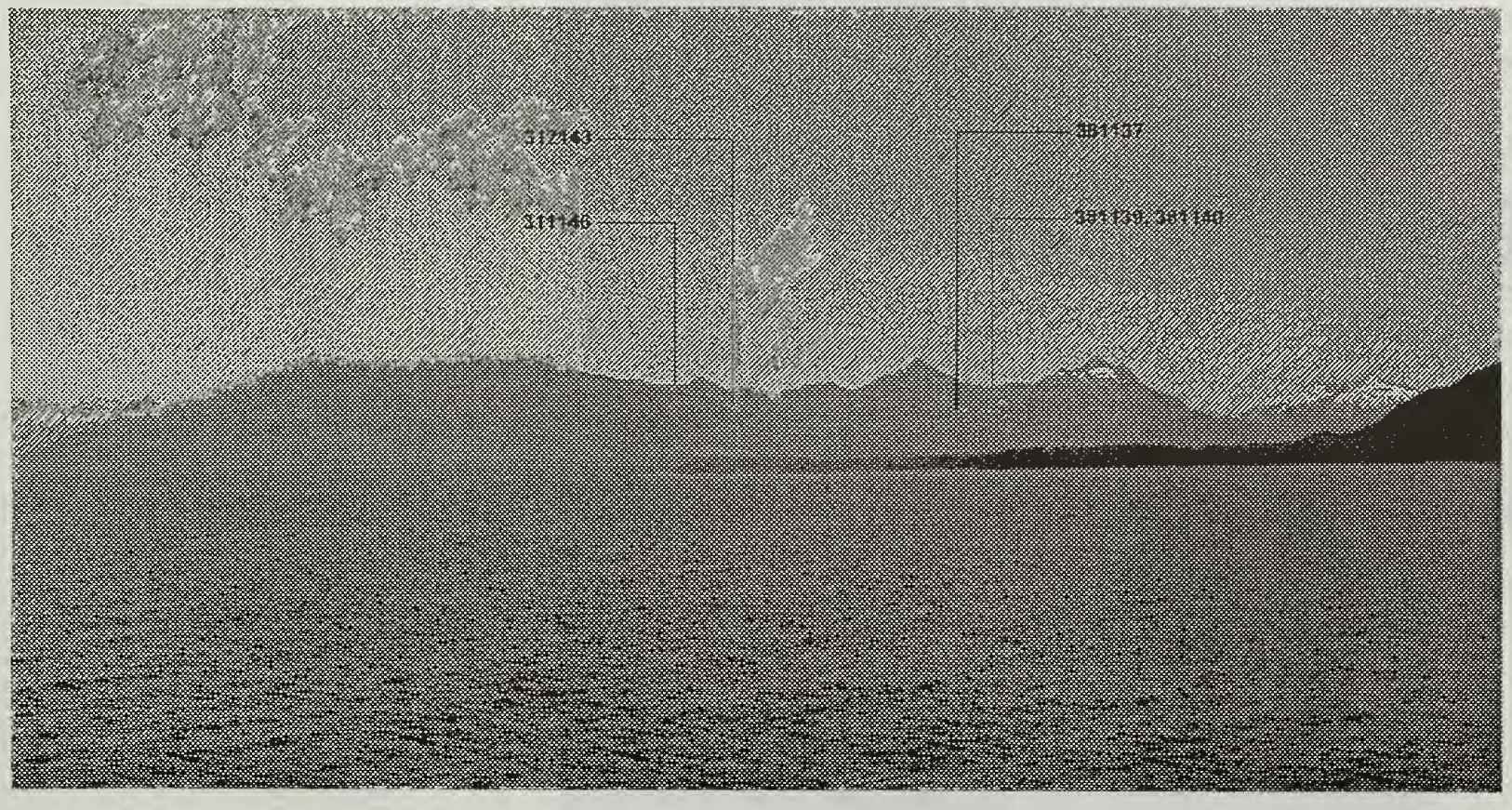
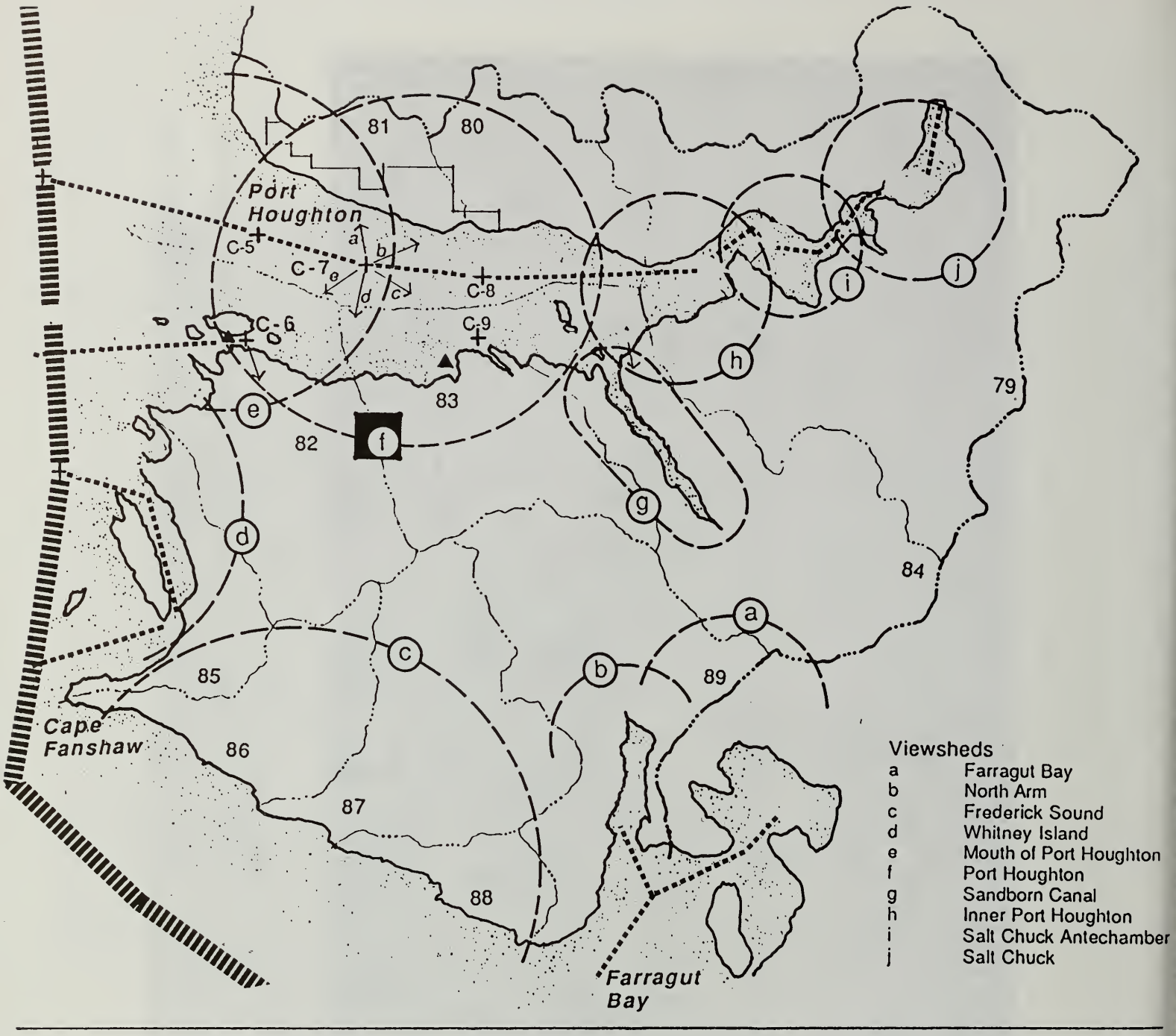
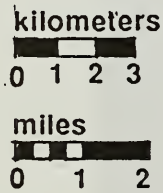


Figure 39.
Visual Simulation of Alternative C from Viewpoint C-2-a Mouth of Port Houghton Viewshed
View looking northeast from Alaska Marine Highway at the mouth of Port Houghton

Figure 40.
Visual Simulation of Alternative D from Viewpoint C-2-b Mouth of Port Houghton Viewshed
View looking east from Alaska Marine Highway at the mouth of Port Houghton







Legend

- Water
- VCU Boundary
- Viewpoint
- Viewshed
- Alaska Marine Highway
- Small Boat Route
- Recreation Site
- VCU Number

Figure 41.
Port Houghton Viewshed and Viewpoints

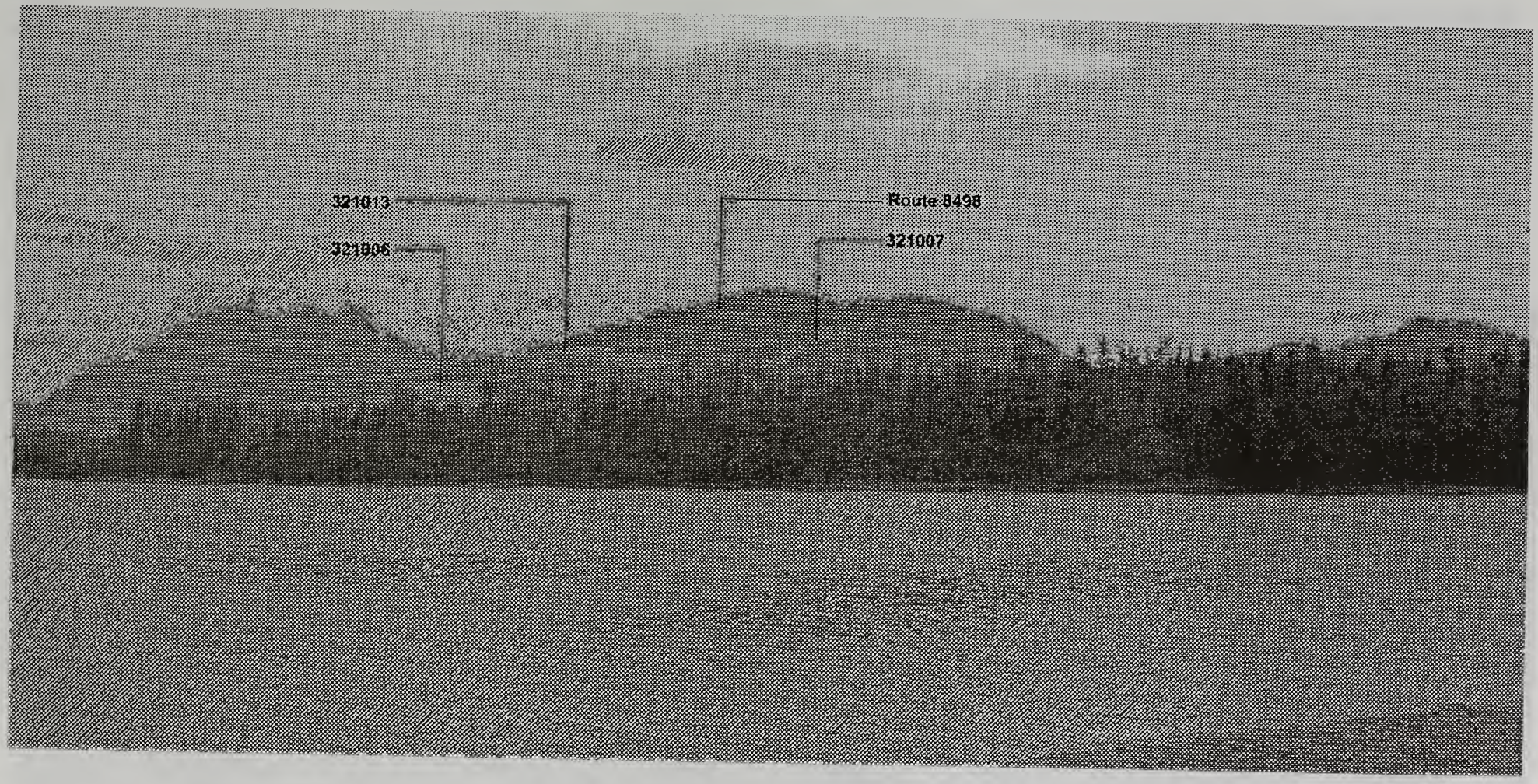


Figure 42.
Visual Simulation of Alternative C at Viewpoint C-6
Port Houghton Viewshed
View looking south by southeast from southeast shore of Robert Island

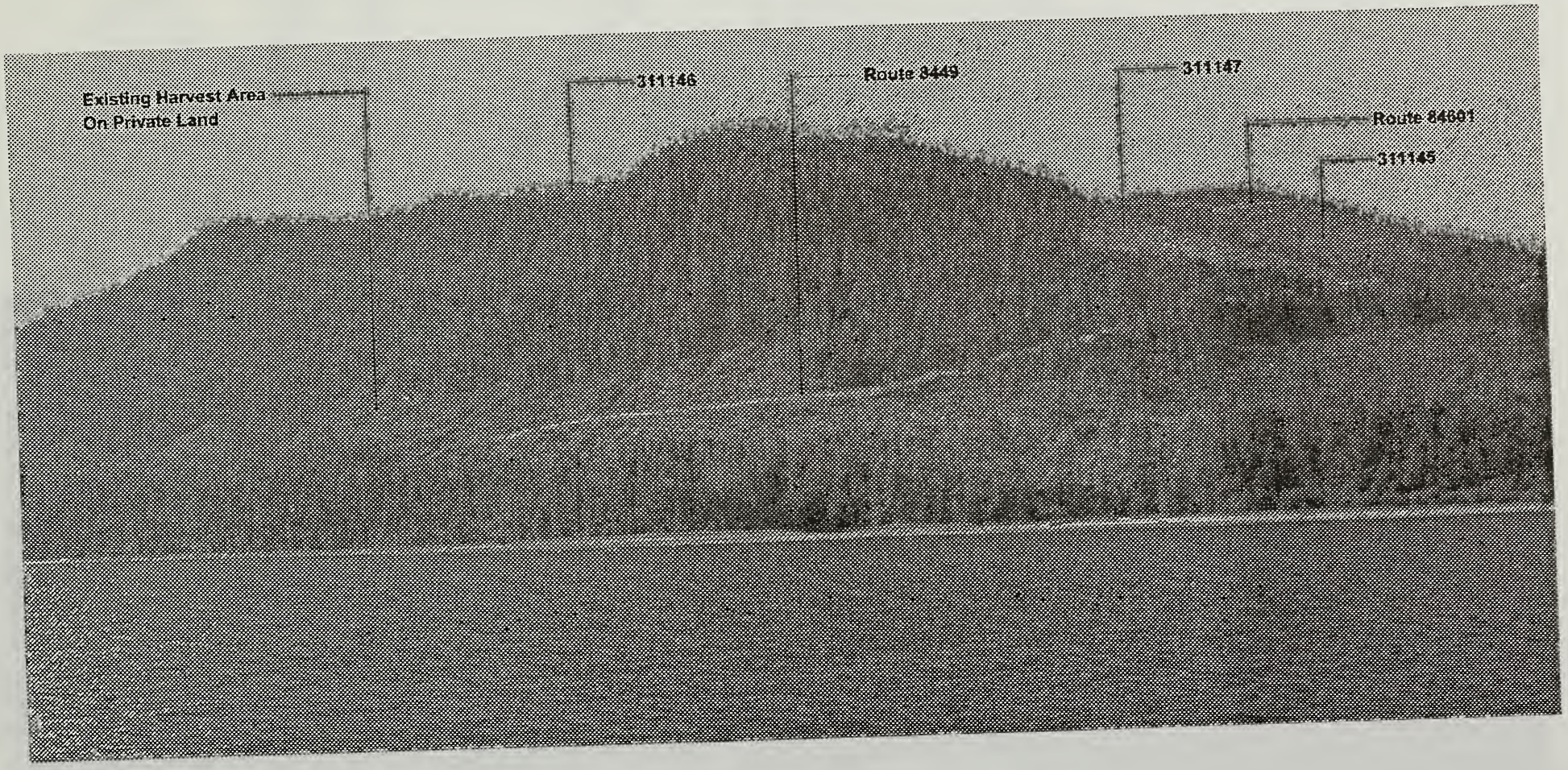


Figure 43.
Visual Simulation of Alternative C from Viewpoint C-7-a
Port Houghton Viewshed
View looking north from small boat route in Port Houghton

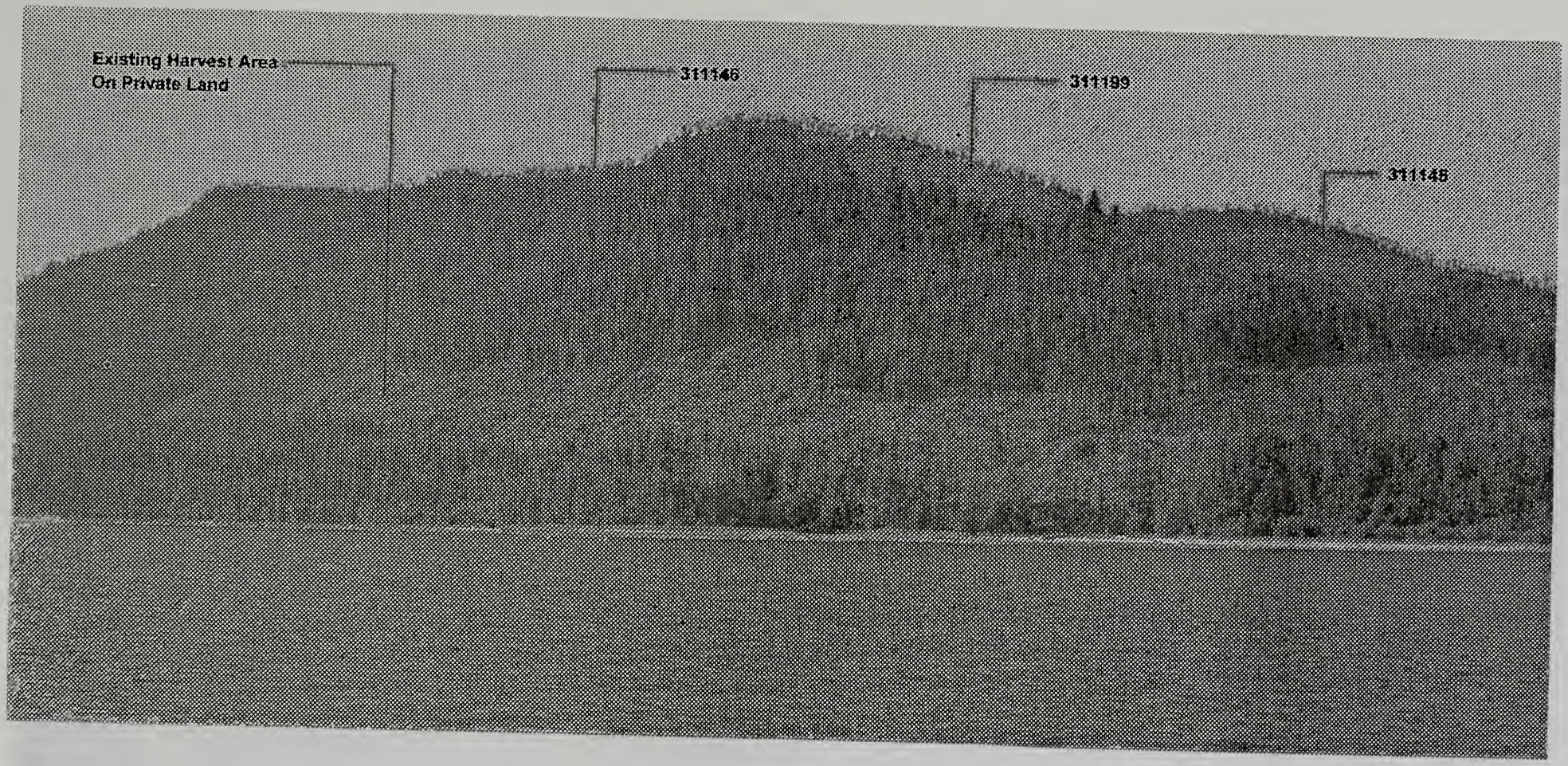


Figure 44.
Visual Simulation of Alternative D from Viewpoint C-7-a
Port Houghton Viewshed
View looking north from small boat route in Port Houghton

Figure 45.
Visual Simulation of Alternative B from Viewpoint C-7-b
Port Houghton Viewshed
View looking northeast from small boat route in Port Houghton

Figure 46.
Visual Simulation of Alternative B from Viewpoint C-7-c
Port Houghton Viewshed
View looking southeast from small boat route in Port Houghton

Figure 47.
Visual Simulation of Alternative E from Viewpoint C-7-c
Port Houghton Viewshed
View looking southeast from small boat route in Port Houghton

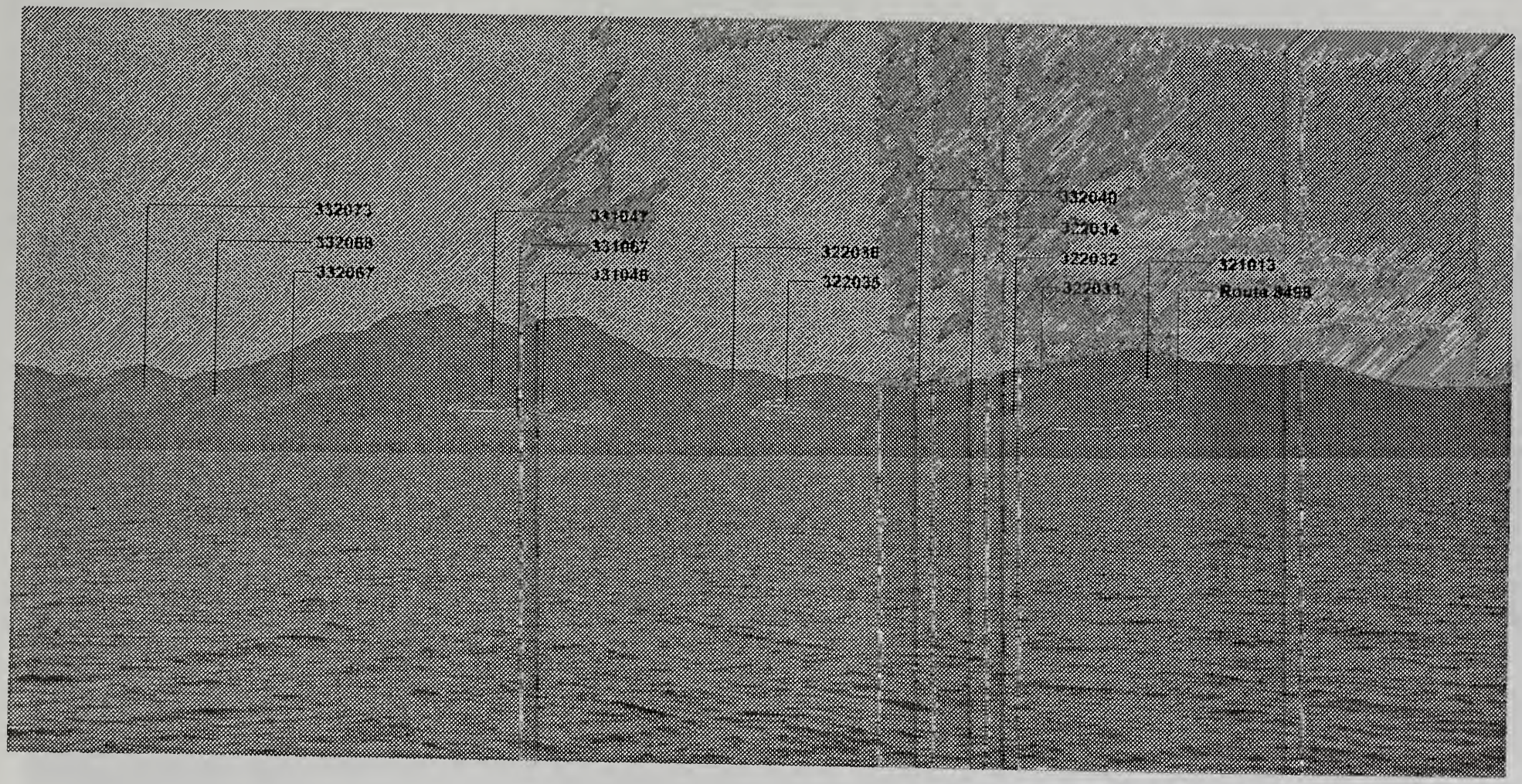


Figure 48.
Visual Simulation of Alternative B from Viewpoint C-7-d Port Houghton Viewshed
View looking south by southwest from small boat route in Port Houghton

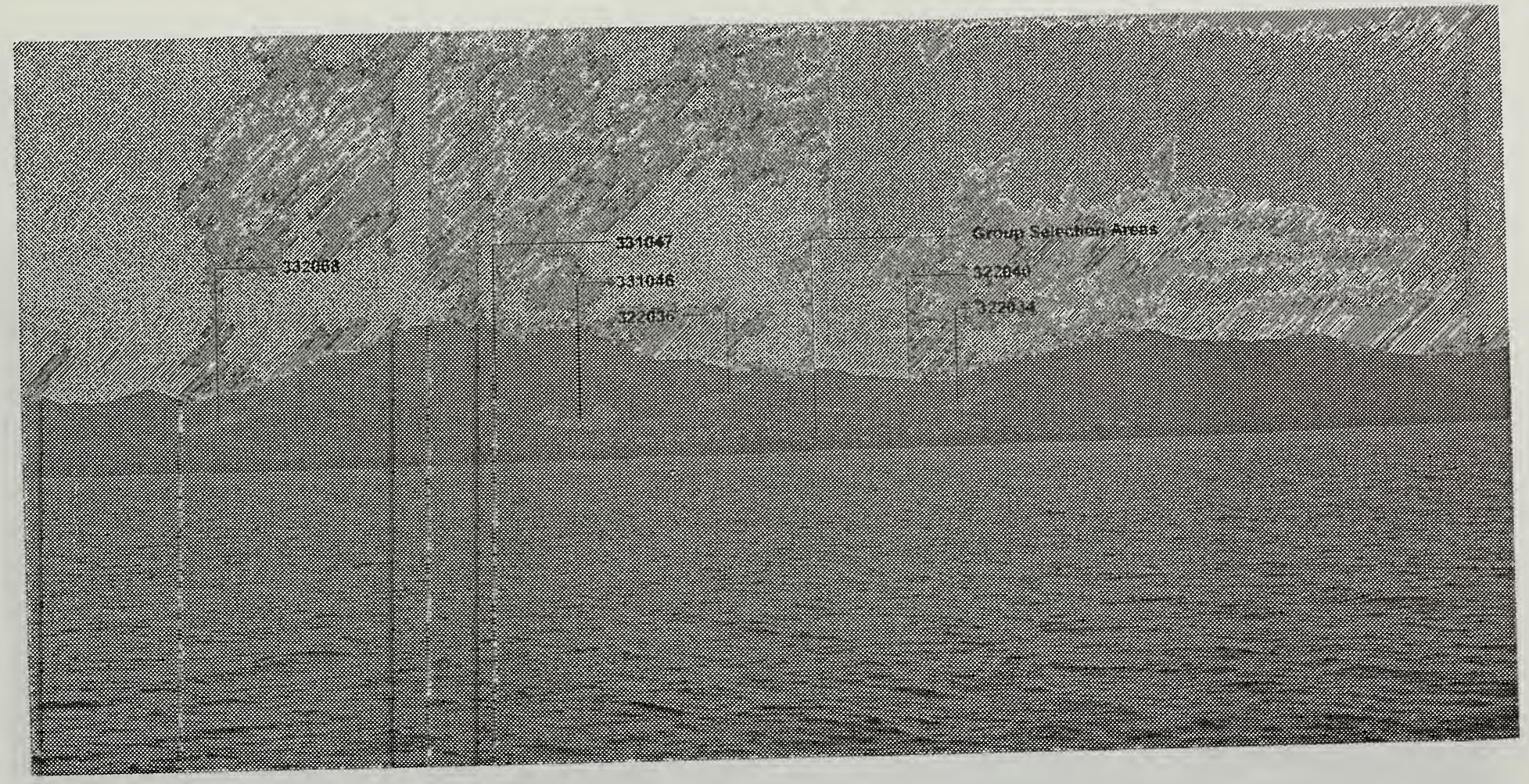


Figure 49.
Visual Simulation of Alternative D from Viewpoint C-7-d
Port Houghton Viewshed
View looking south by southwest from small boat route in Port Houghton

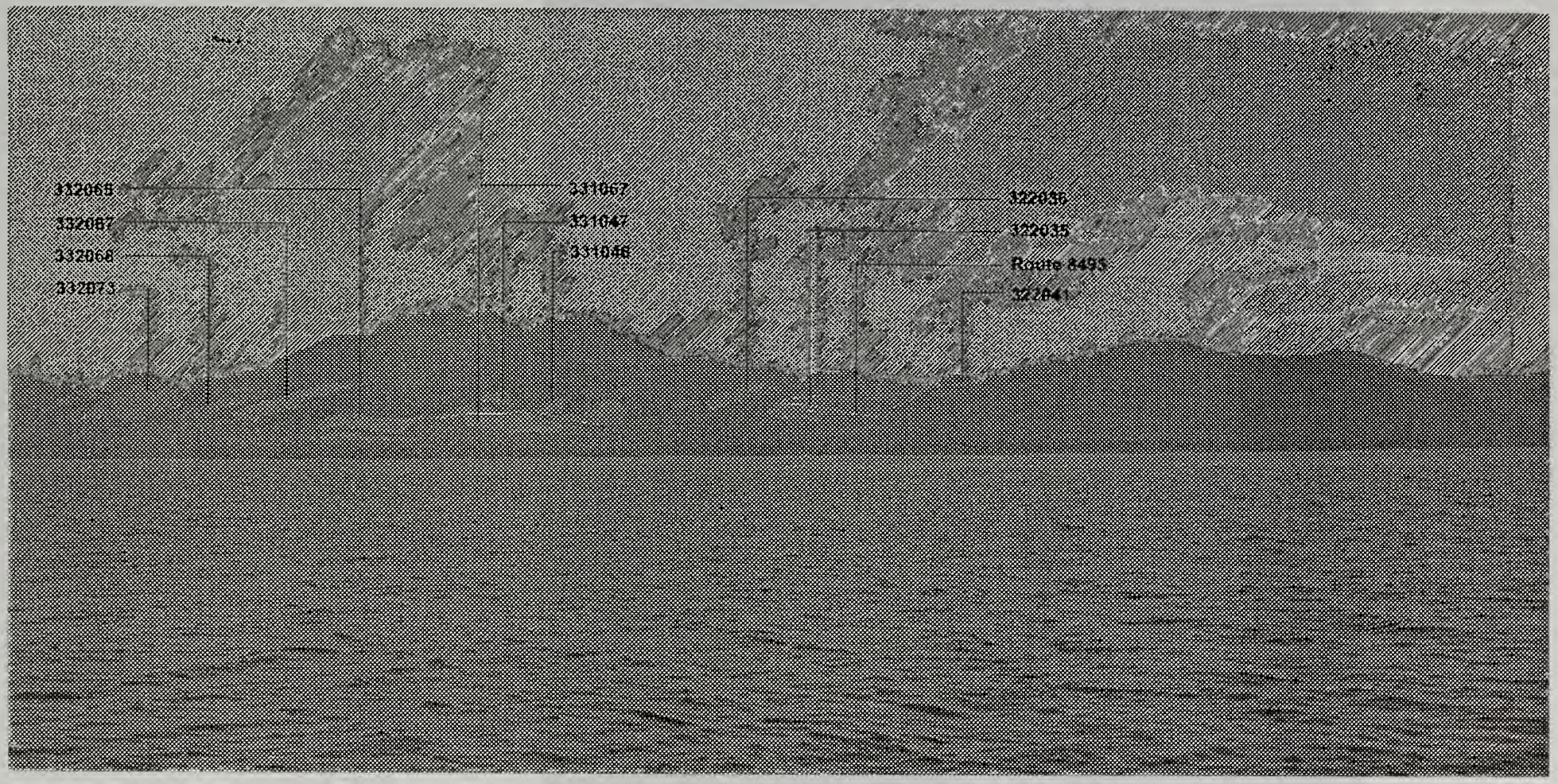


Figure 50.
Visual Simulation of Alternative E from Viewpoint C-7-d Port Houghton Viewshed
View looking south by southwest from small boat route in Port Houghton

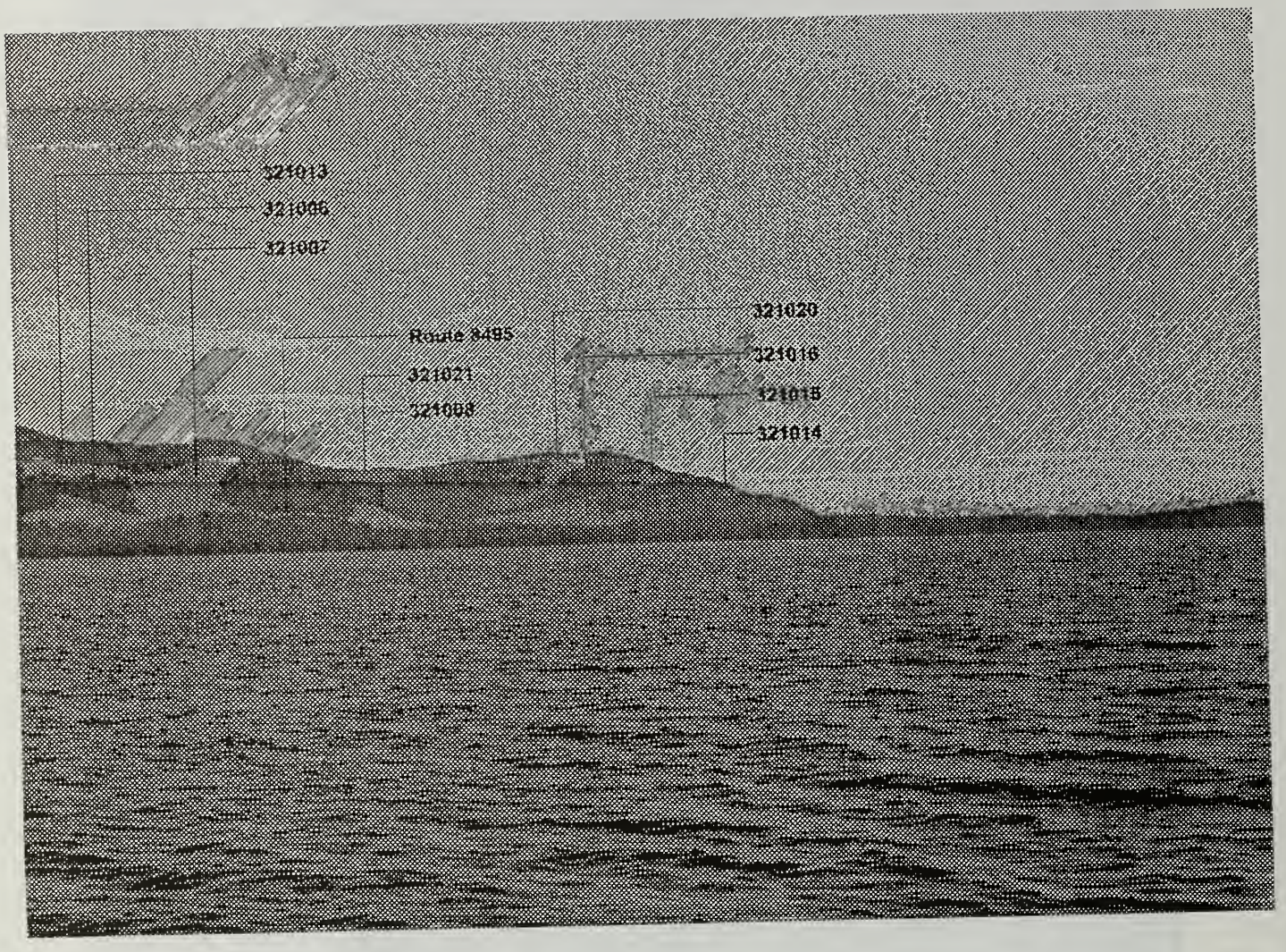


Figure 51.
Visual Simulation of Alternative C from Viewpoint C-7-e Port Houghton Viewshed
View looking southeast from small boat route in Port Houghton

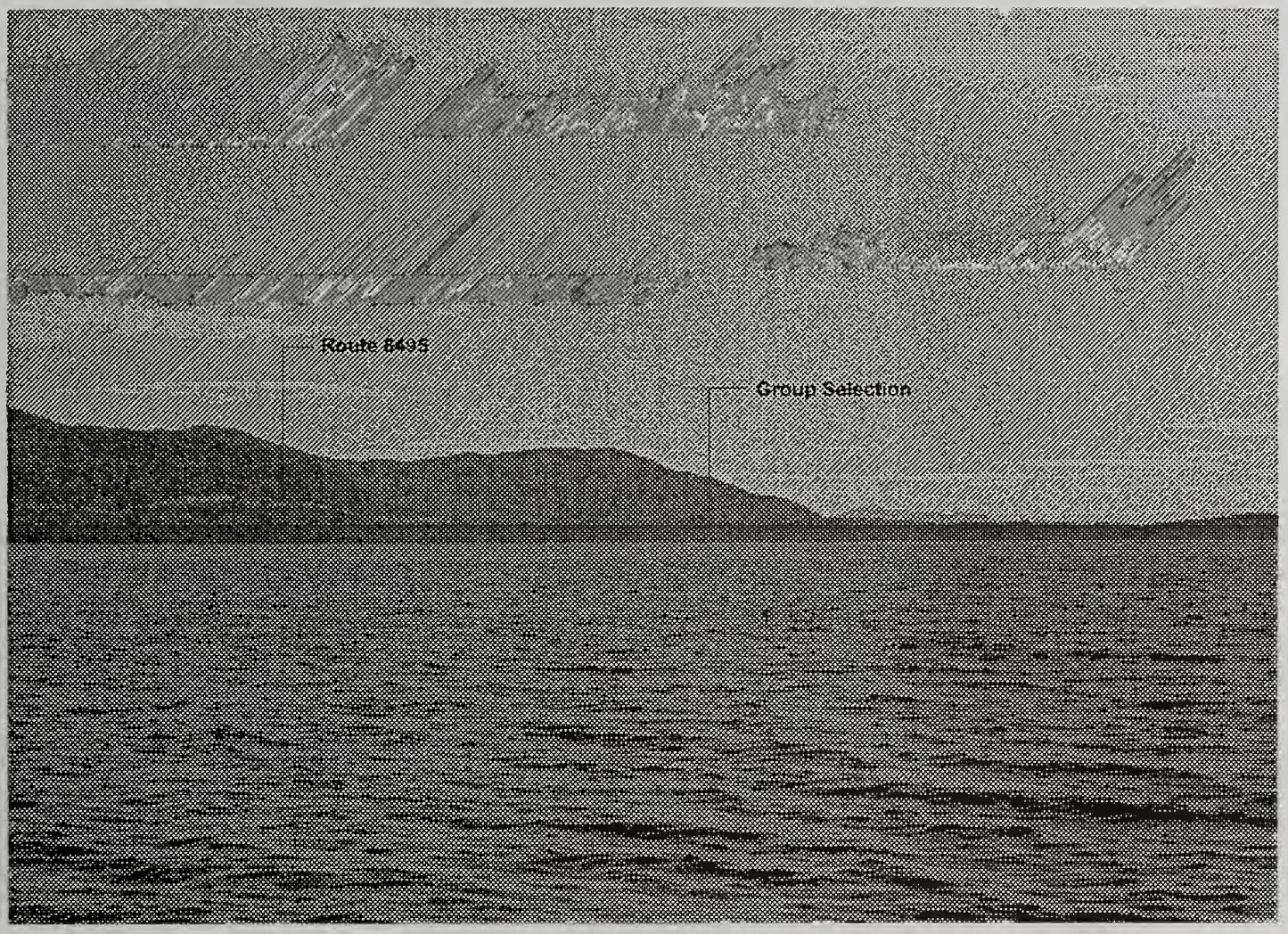
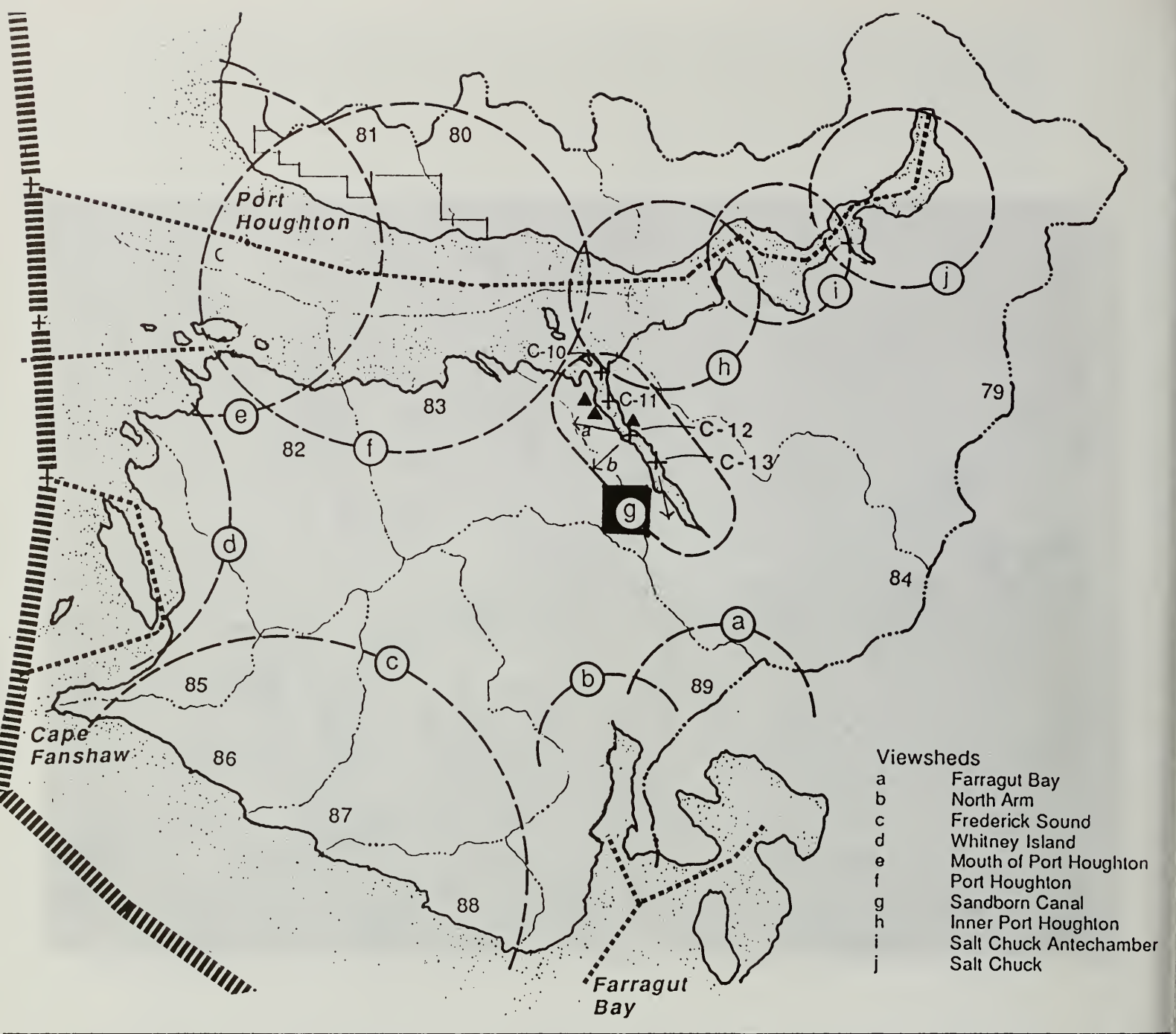


Figure 52.
Visual Simulation of Alternative D from Viewpoint C-7-e Port Houghton Viewshed
View looking southeast from small boat route in Port Houghton



kilometers
0 1 2 3

miles
0 1 2

North

Legend

- Water
- VCU Boundary
- Viewpoint
- Viewshed
- Alaska Marine Highway
- Small Boat Route
- Recreation Site
- VCU Number (80)

Figure 53.
Sandborn Canal Viewshed and Viewpoints

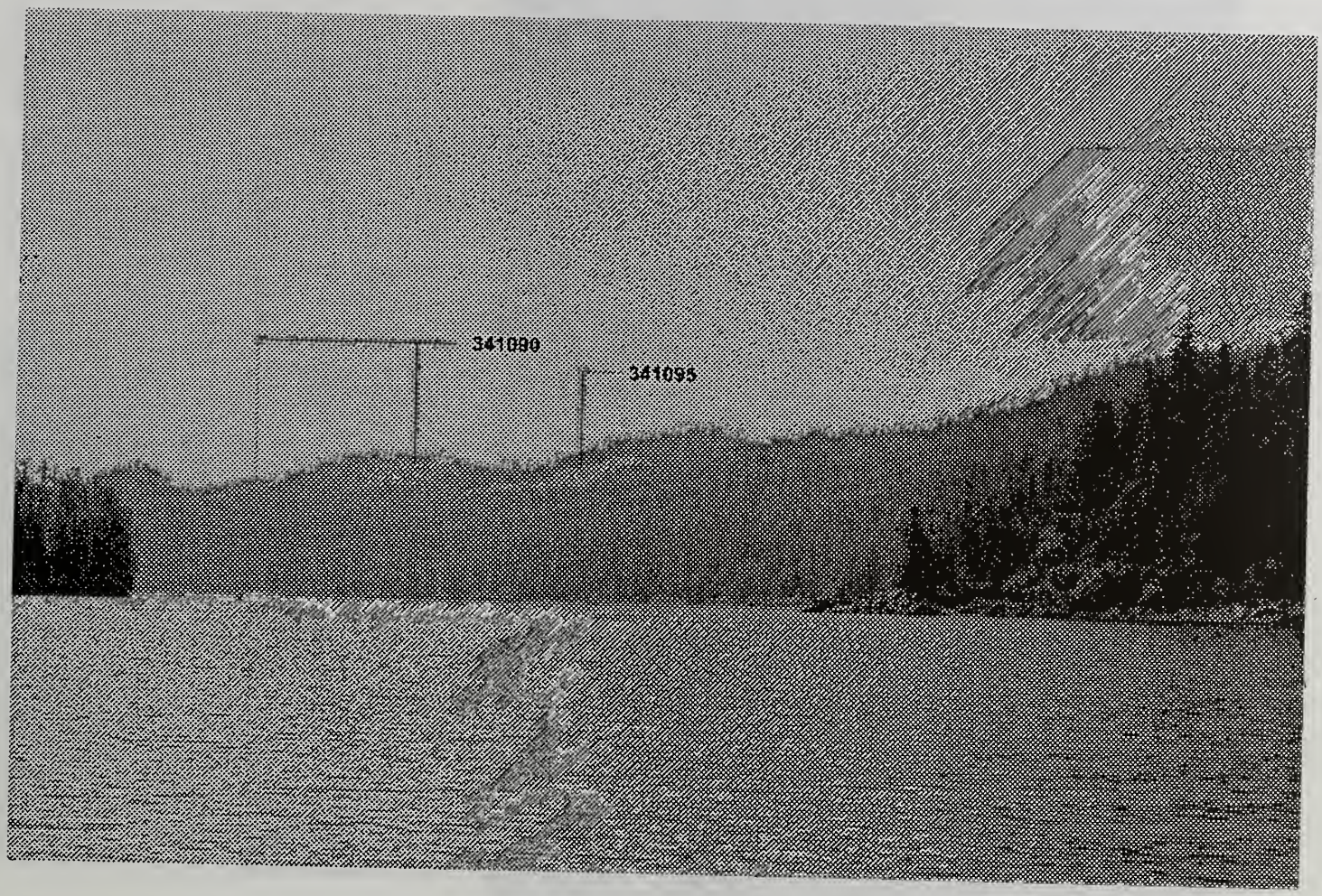


Figure 54.
Visual Simulation of Alternative E from Viewpoint C-10 Sandborn Canal Viewshed
View looking south from small boat at mouth of Sandborn Canal

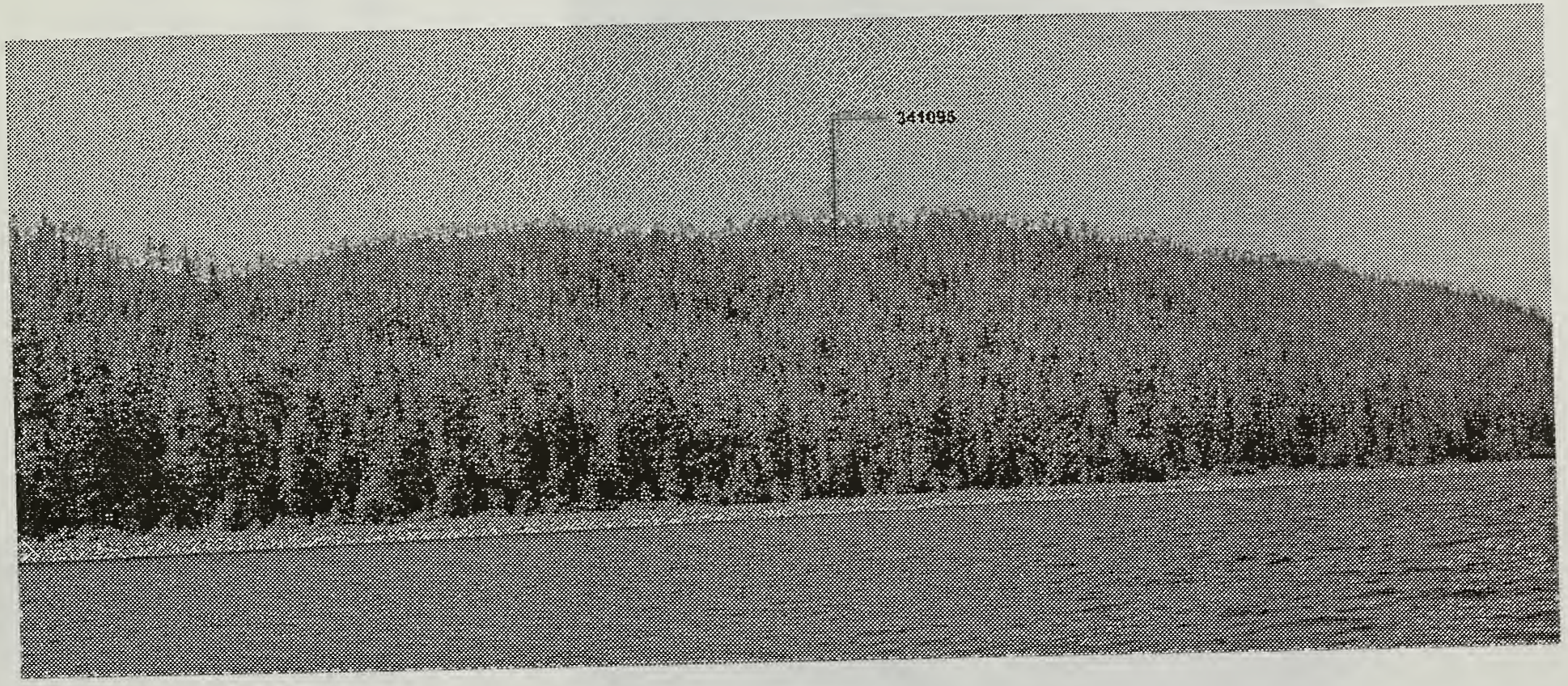


Figure 55.
Visual Simulation of Alternative E from Viewpoint C-12-a
Sandborn Canal Viewshed
View looking west from small boat in Sandborn Canal

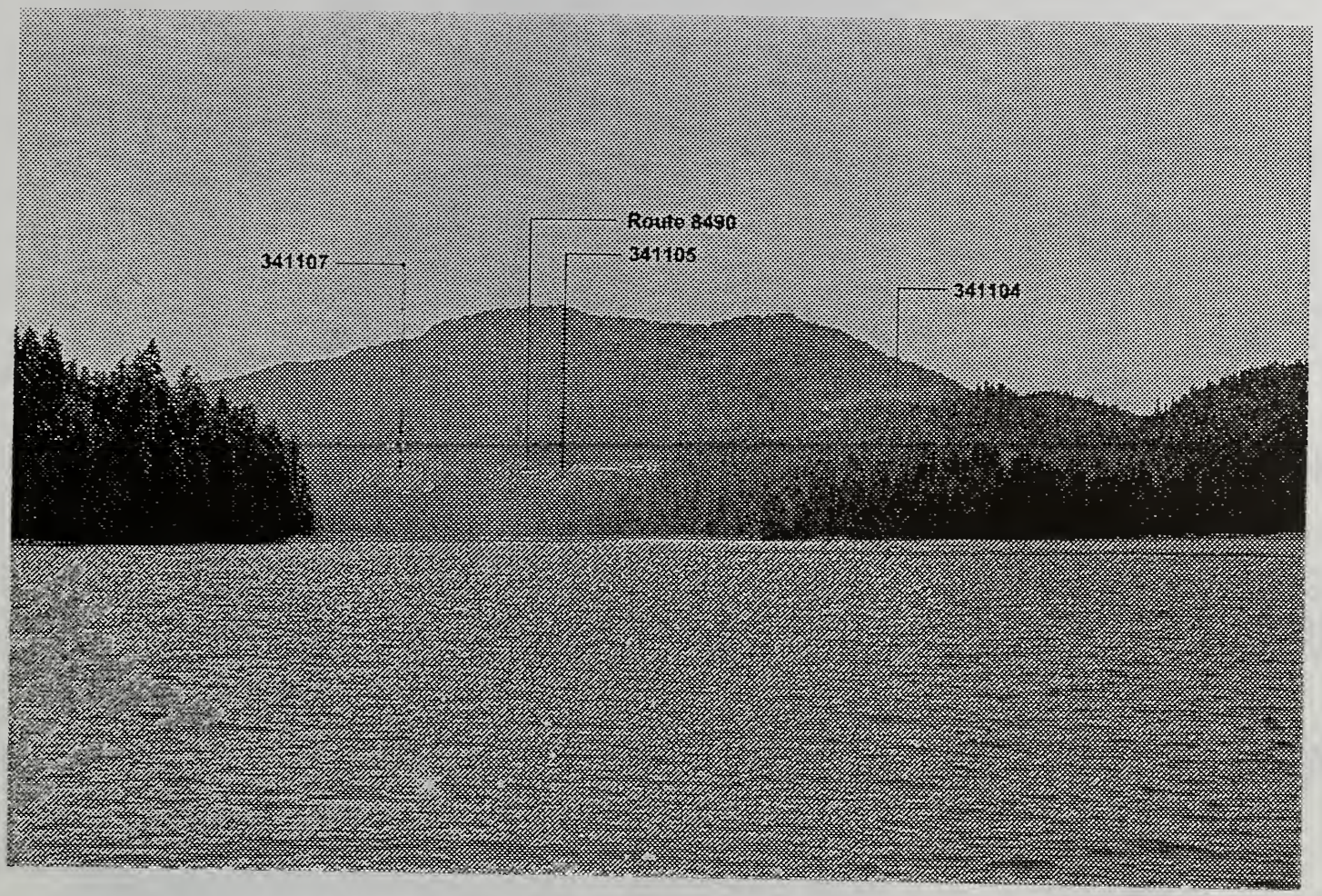
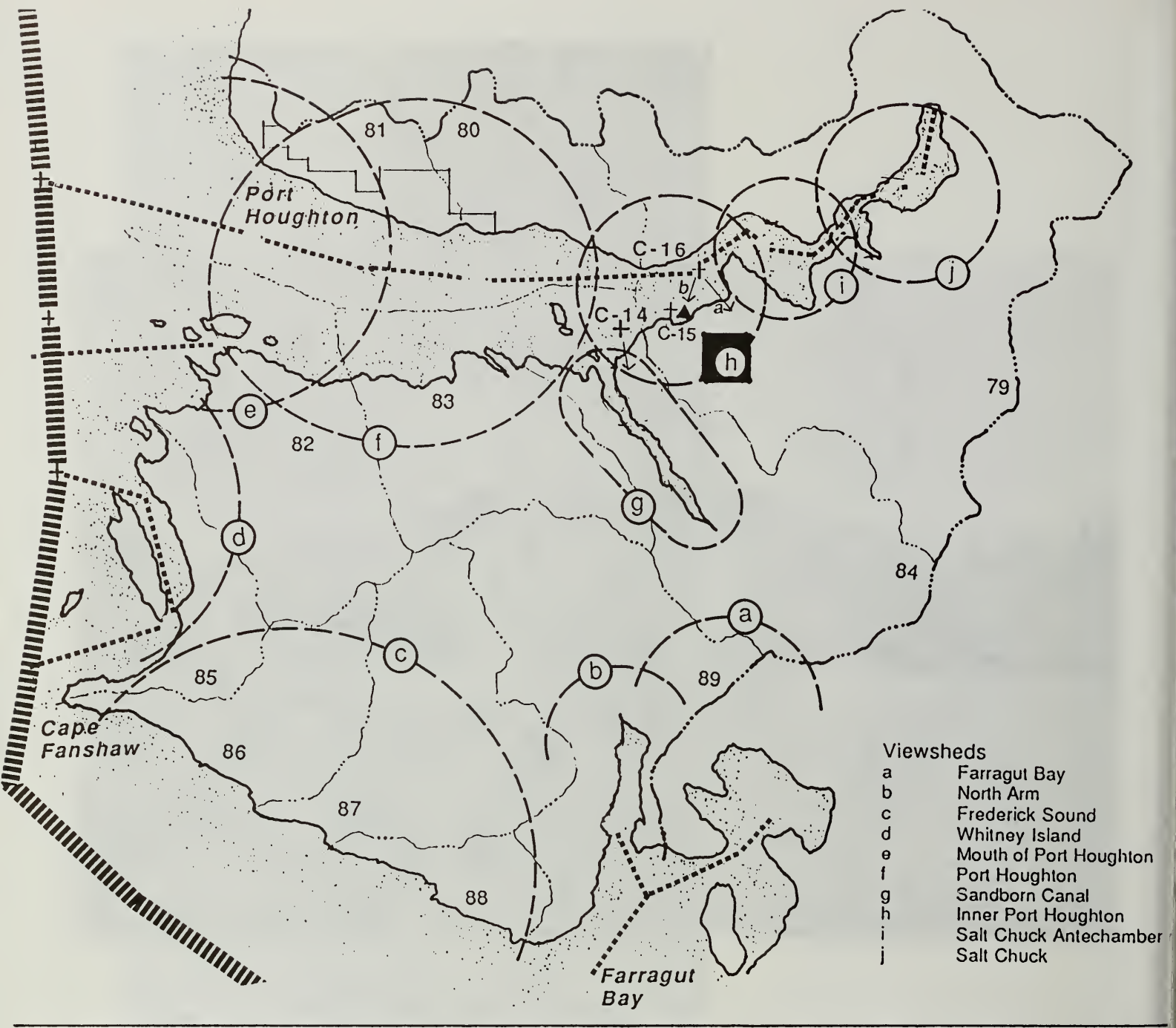


Figure 56.
Visual Simulation of Alternative E from Viewpoint C-13
Sandborn Canal Viewshed
View looking south by southeast from small boat at end of Sandborn Canal



kilometers
0 1 2 3

miles
0 1 2

North

Legend

- Water
- VCU Boundary
- Viewpoint
- Viewshed
- Alaska Marine Highway
- Small Boat Route
- Recreation Site
- VCU Number (80)

Figure 57.
Inner Port Houghton Viewshed and Viewpoints

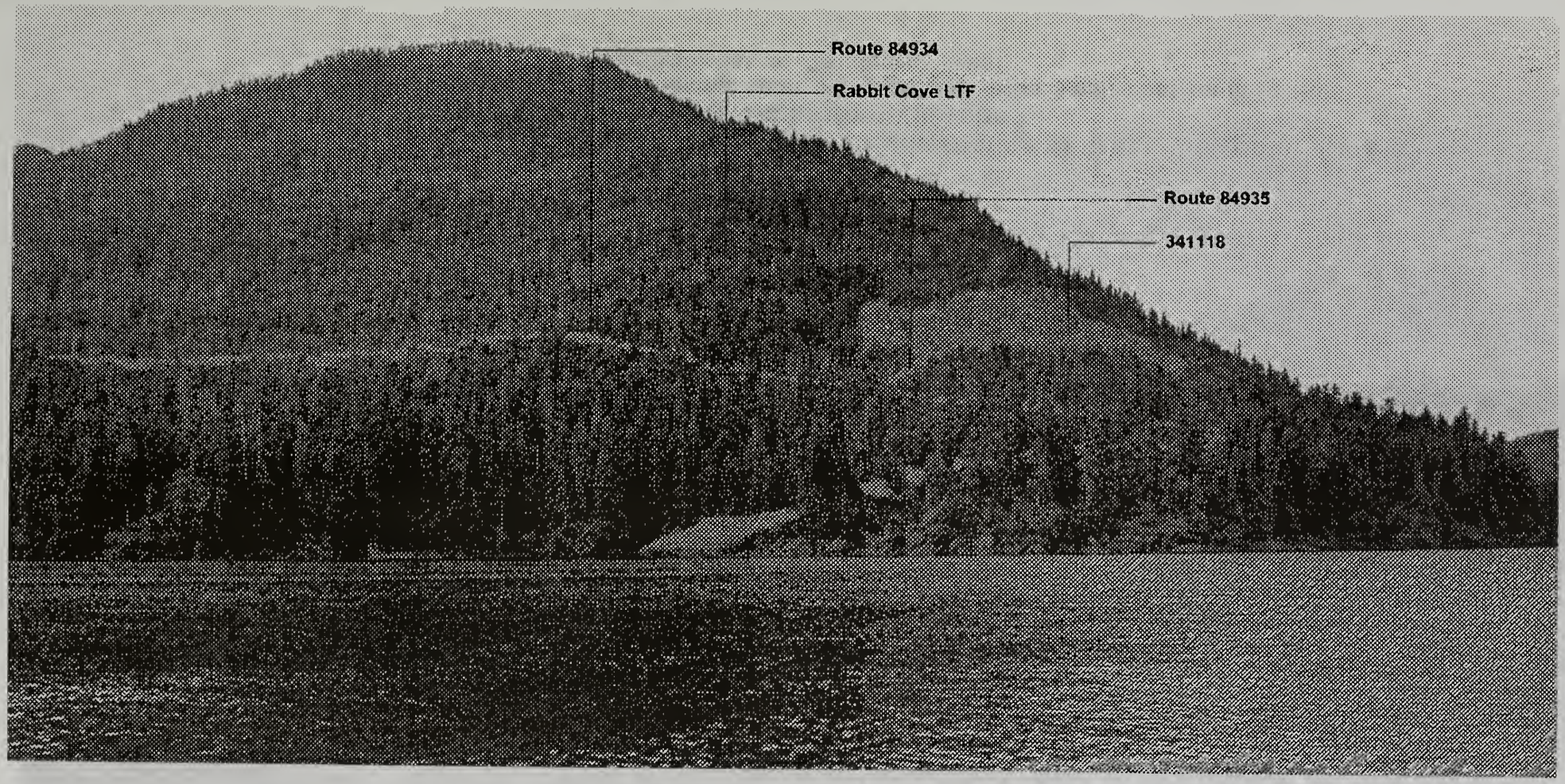


Figure 58.
Visual Simulation of Alternative B from Viewpoint C-14 Inner Port Houghton Viewshed
View looking south from small boat off the south shore of Port Houghton, east of Sandborn Canal

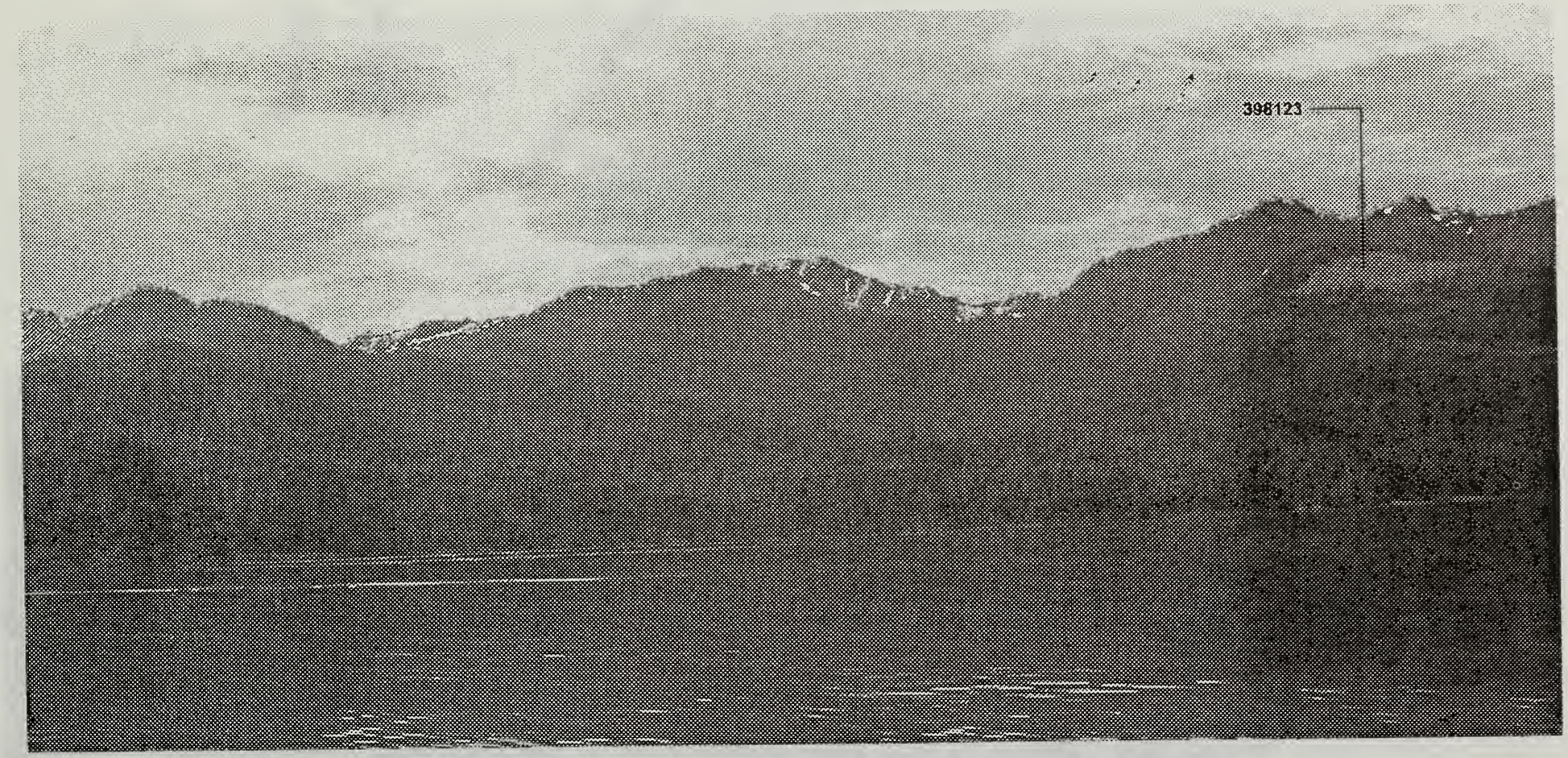


Figure 59.
Visual Simulation of Alternative B from Viewpoint C-16-a Inner Port Houghton Viewshed
View looking south by southwest from small boat route in Port Houghton,east of Sandborn Canal

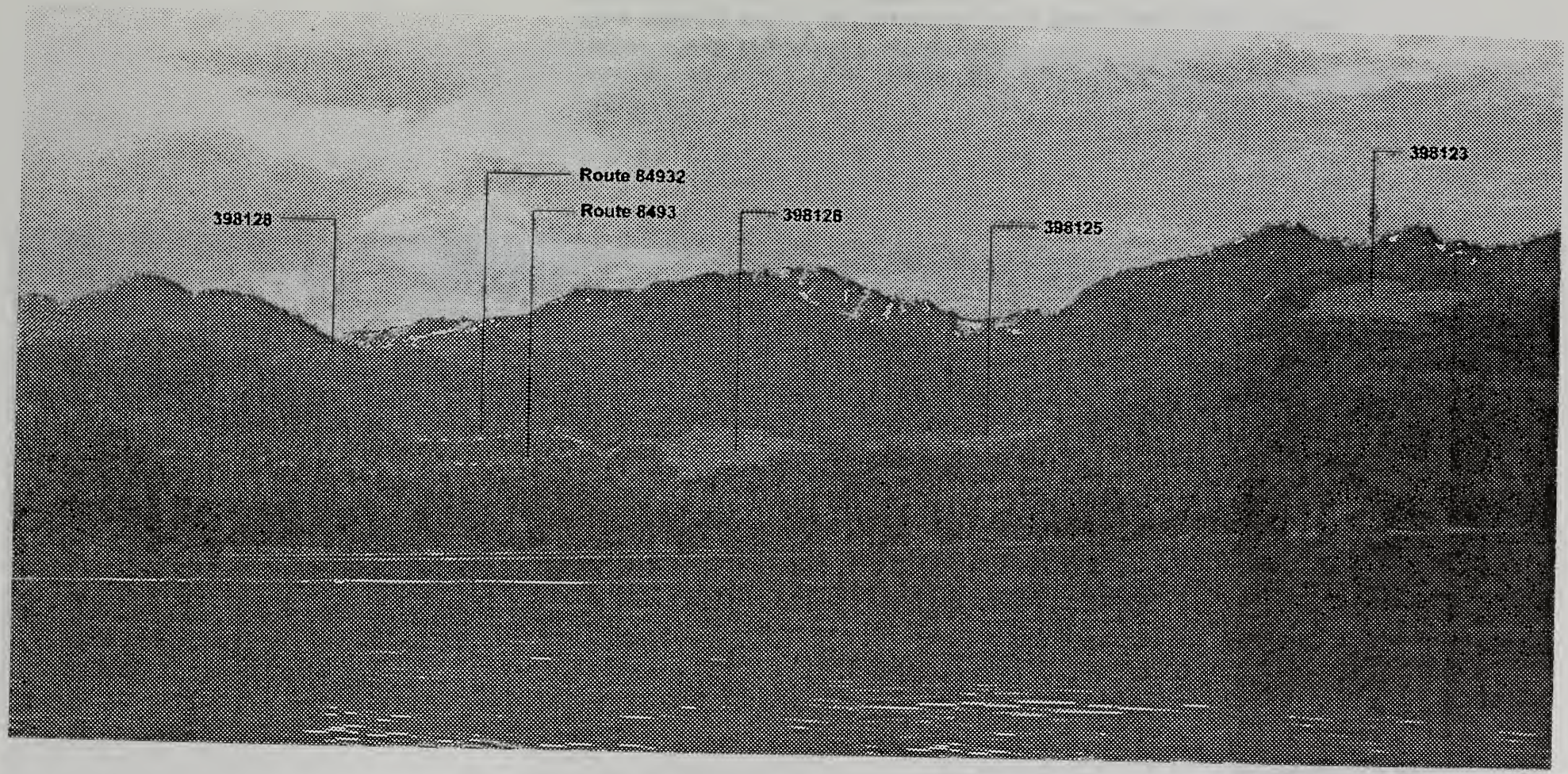


Figure 60.
Visual Simulation of Alternative C from Viewpoint C-16-a Inner Port Houghton Viewshed
View looking south by southwest from small boat route in Port Houghton, east of Sandborn Canal

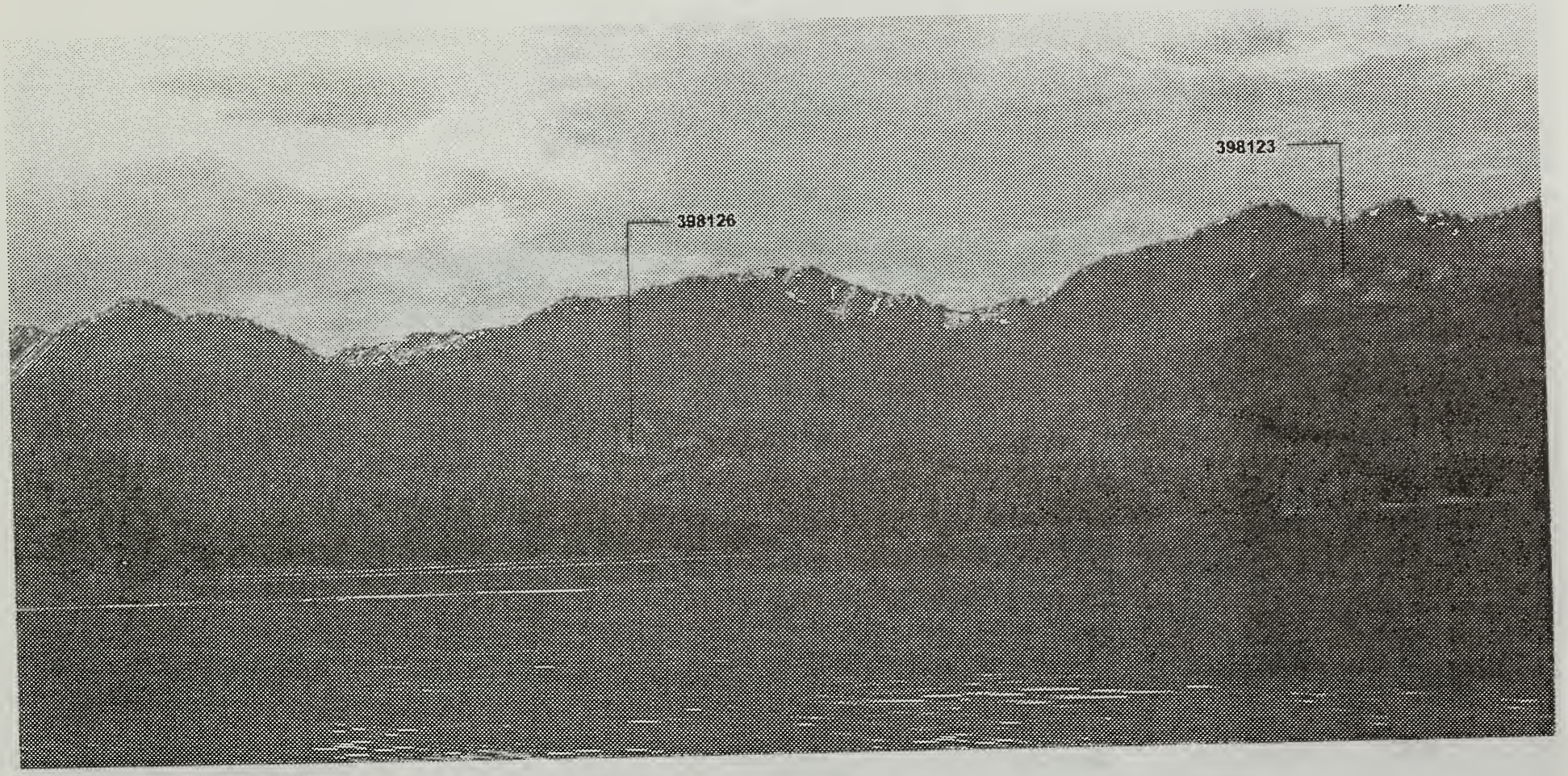


Figure 61.
Visual Simulation of Alternative D from Viewpoint C-16-a Inner Port Houghton Viewshed
View looking south by southwest from small boat route in Port Houghton, east of Sandborn Canal

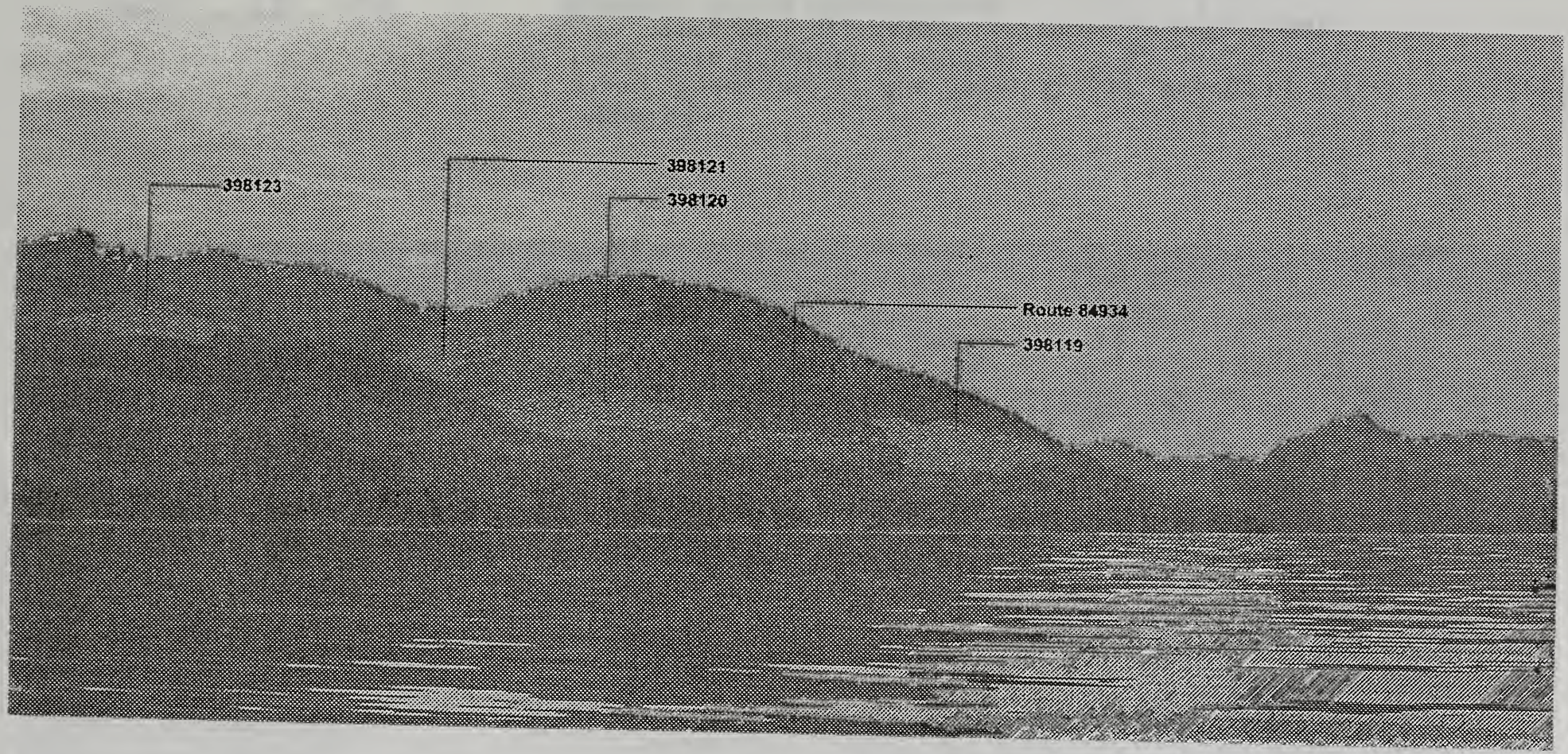
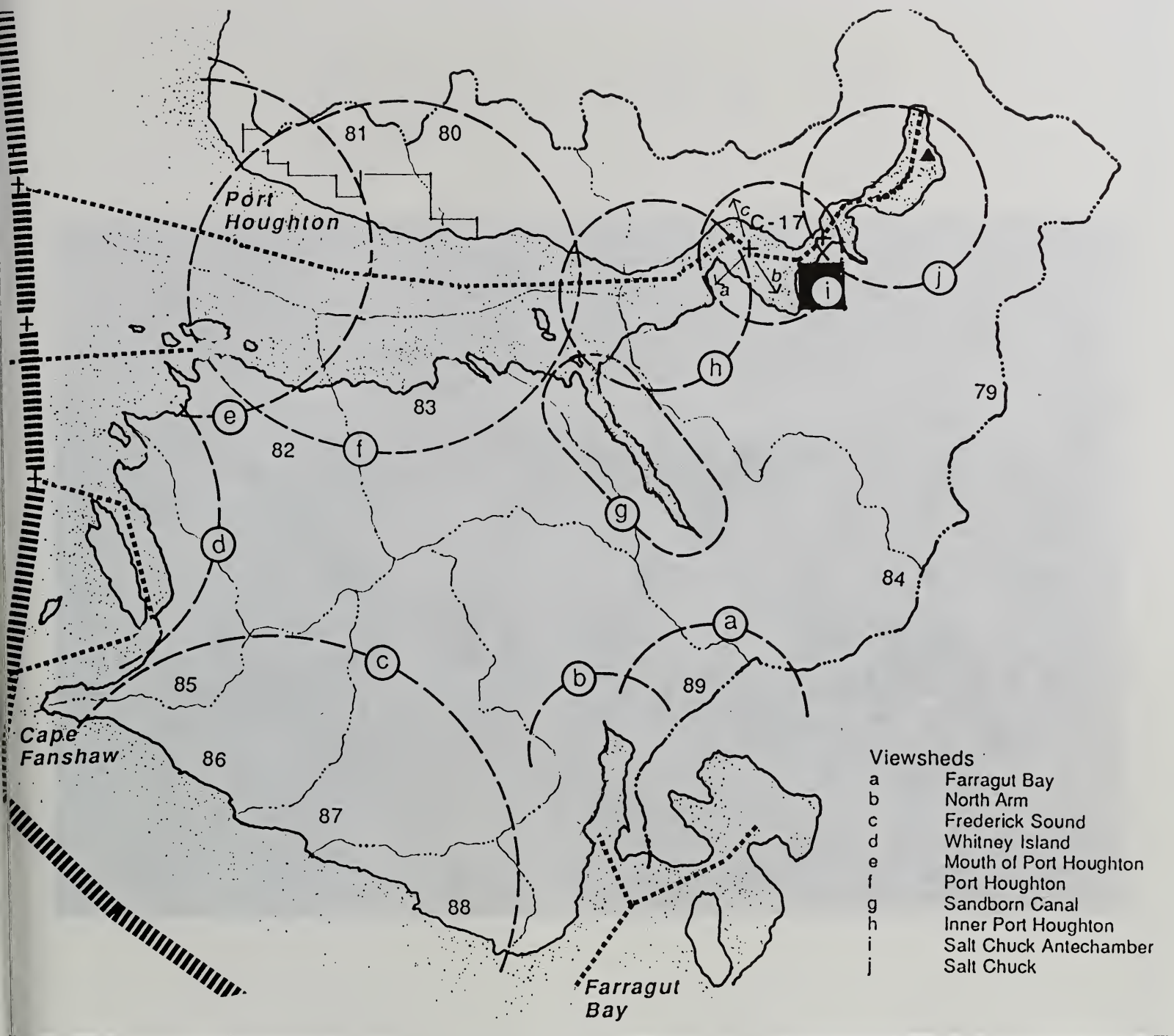
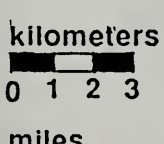


Figure 62.
Visual Simulation of Alternative B from Viewpoint C-16-b Inner Port Houghton Viewshed
View looking south by southeast from small boat route in Port Houghton, east of Sandborn Canal

Figure 63.
Visual Simulation of Alternative D from Viewpoint C-16-b
Inner Port Houghton Viewshed
View looking south by southeast from small boat route in Port Houghton, east of Sandborn Canal







Legend

Water

VCU Boundary

Viewpoint

Viewshed

Alaska Marine Highway

Small Boat Route

Recreation Site

80 VCU Number

Figure 64.
Salt ChuckAntechamber Viewshed and Viewpoints

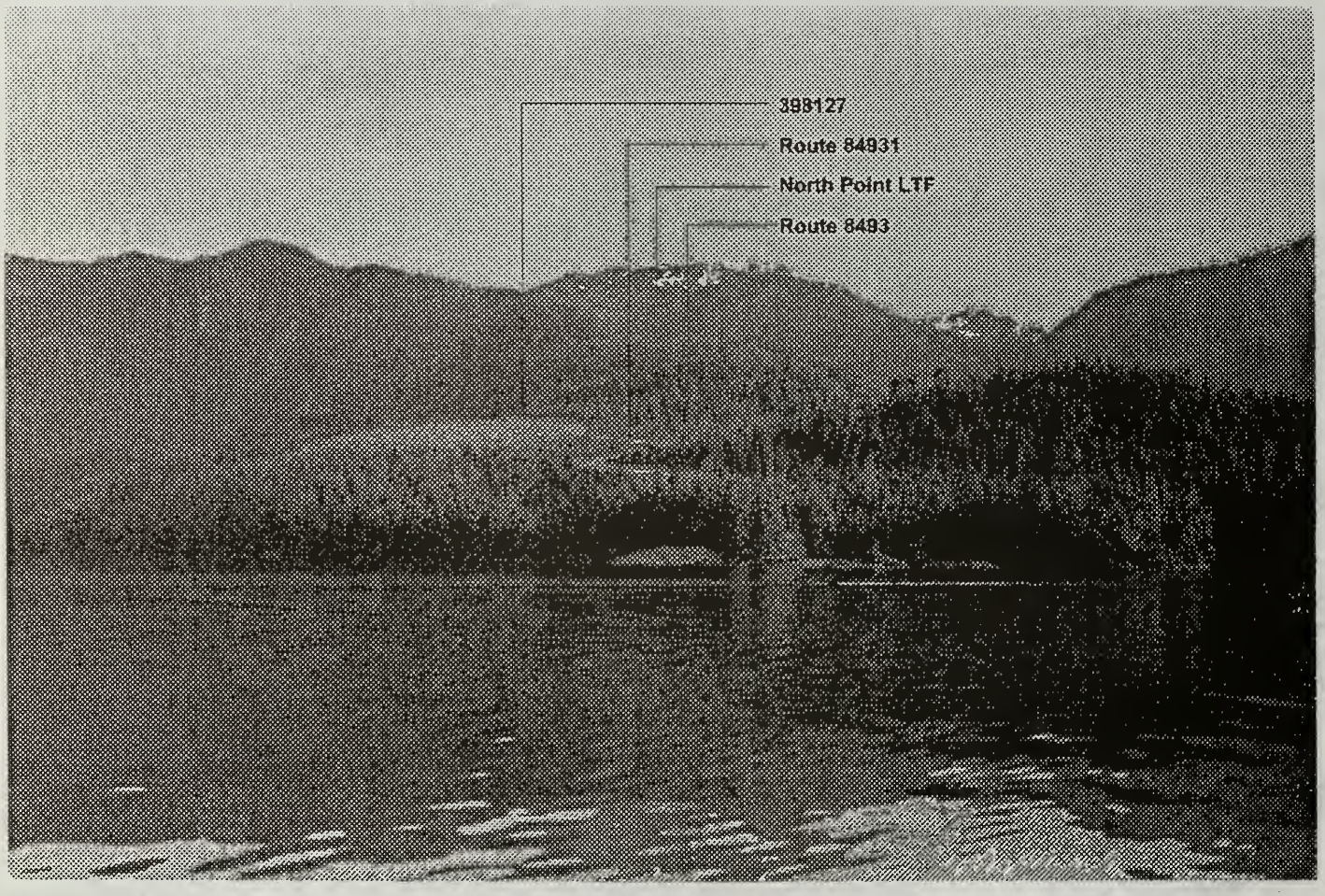


Figure 65.
Visual Simulation of Alternative C from Viewpoint C-17-a Salt Chuck Antechamber Viewshed
View looking southwest from small boat route in Port Houghton, east of North Point

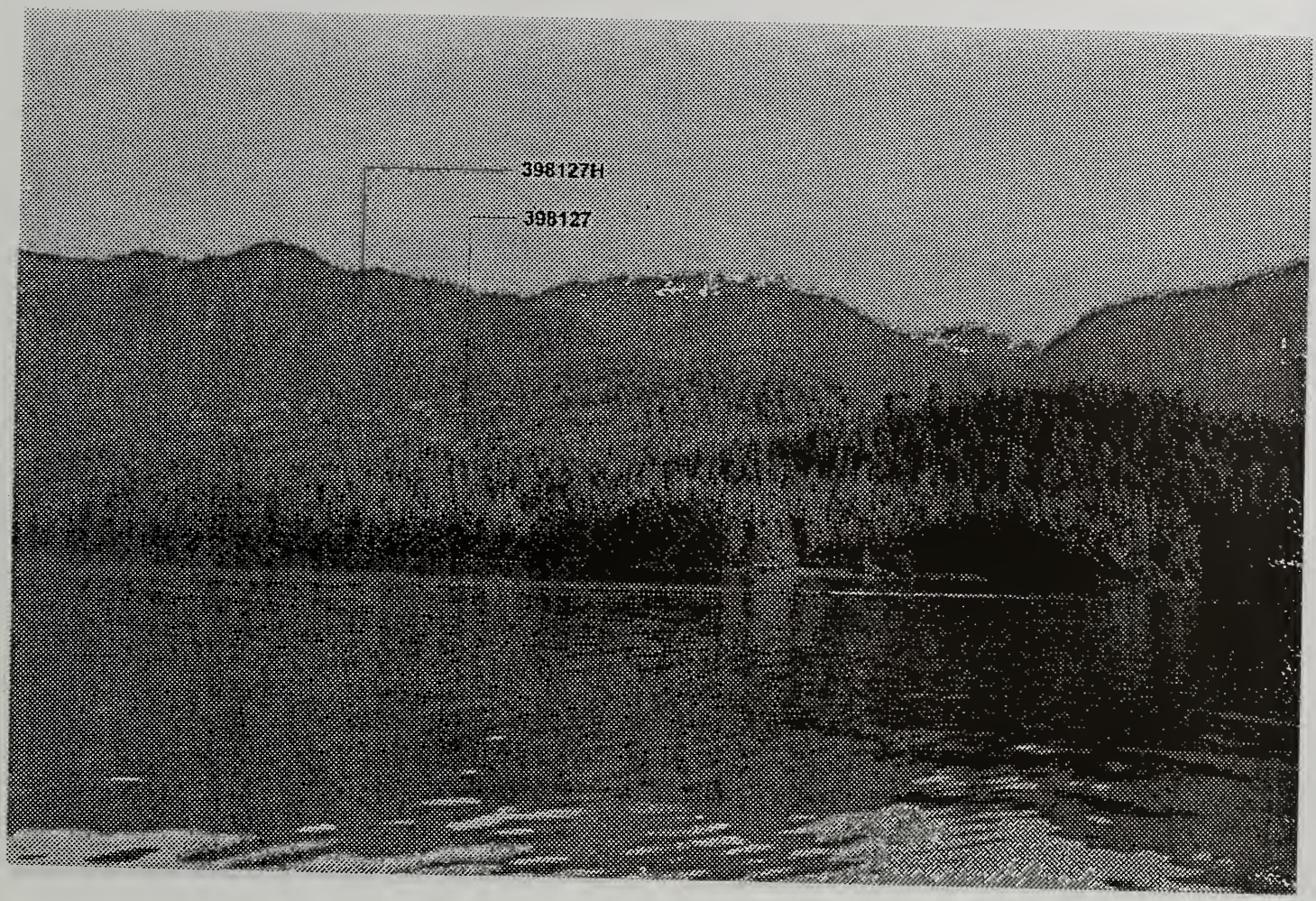


Figure 66.
Visual Simulation of Alternative D from Viewpoint C-17-a
Salt Chuck Antechamber Viewshed
View looking southwest from small boat route in Port Houghton, east of North Point

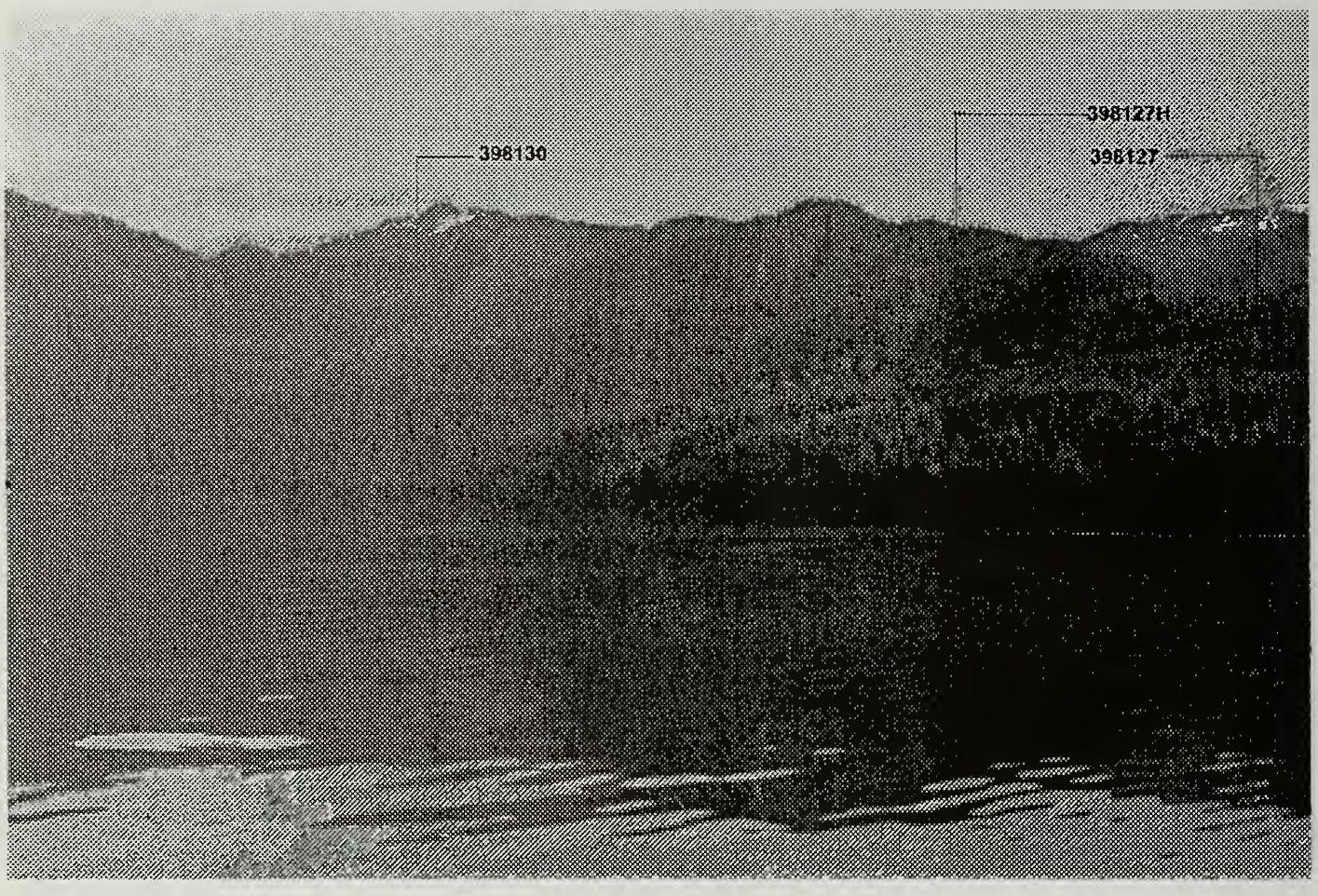


Figure 67.
Visual Simulation of Alternative D from Viewpoint C-17-b Salt Chuck Antechamber Viewshed
View looking south by southeast from small boat route in Port Houghton, east of North Point

Appendix H

Wildlife Tables

Appendix H

Table H-1

MIS Species Habitat Capability (acres) in the Port Houghton/Cape Fanshaw Project Area for Alternative B.

	Unsuitable HSI=0		Unfavorable 0<HSI≤0.3		Marginal 0.3<HSI<0.7		Suitable 0.7≤HSI<1	
	WAA 2927	WAA 1601	WAA 2927	WAA 1601	WAA 2927	WAA 1601	WAA 2927	WAA 1601
Sitka black-tailed deer with predation	125,809	9,450	22,785	30,125	1,330	9,977	--	--
Mountain goat	84,273	45,369	52,480	3,005	12,174	315	1,000	863
Black bear	38,655	290	18,320	1,998	69,931	34,231	23,018	13,032
Marten	91,042	8,733	14,804	14,800	23,898	15,523	20,180	10,495
Land otter	141,517	45,599	1,395	820	--	--	7,013	3,032
Bald eagle	142,277	46,406	133	13	2,073	1,408	4,943	1,725
Red squirrel	57,052	2,315	48,664	20,508	42,545	26,603	1,663	125
Vancouver Canada goose	102,836	22,284	26,525	6,477	19,348	13,941	1,230	6,849
Red-breasted sapsucker	64,647	3,948	41,126	18,928	19,990	3,499	24,160	23,177
Hairy woodpecker	105,836	23,533	12,799	12,870	11,299	9,677	19,990	3,471
Brown creeper	118,608	36,131	11,327	9,922	--	--	19,990	3,499

Note: Numbers for WAA 2927 include VCU 78 which is outside the project area. The HSI for wolf cannot be calculated by the existing habitat capability model.

Table H-2

MIS Species Habitat Capability (acres) in the Port Houghton/Cape Fanshaw Project Area for Alternative C.

	Unsuitable HSI=0		Unfavorable 0<HSI≤0.3		Marginal 0.3<HSI<0.7		Suitable 0.7≤HSI<1	
	WAA 2927	WAA 1601	WAA 2927	WAA 1601	WAA 2927	WAA 1601	WAA 2927	WAA 1601
Sitka black-tailed deer with predation	125,739	9,450	22,613	29,842	1,573	10,259	--	--
Mountain goat	84,303	45,319	52,497	3,053	12,479	148	645	1,033
Black bear	38,655	290	18,793	2,015	72,717	35,129	19,759	12,117
Marten	91,045	8,730	14,629	14,115	23,913	16,113	20,338	10,592
Land otter	141,517	45,599	1,390	820	--	--	7,018	3,132
Bald eagle	142,772	46,406	133	13	2,073	1,408	4,948	1,725
Red squirrel	57,054	2,313	48,557	20,480	42,658	26,633	1,655	125
Vancouver Canada goose	102,831	22,281	26,582	6,477	19,313	14,026	1,213	6,767
Red-breasted sapsucker	64,972	3,935	40,691	18,910	20,243	3,629	24,018	23,077
Hairy woodpecker	105,664	22,845	12,709	13,218	11,309	9,859	20,243	3,629
Brown creeper	118,373	36,063	11,309	9,859	--	--	20,243	3,629

Note: Numbers for WAA 2927 include VCU 78 which is outside the project area. The HSI for wolf cannot be calculated by the existing habitat capability model.

Table H-3

MIS Species Habitat Capability (acres) in the Port Houghton/Cape Fanshaw Project Area for Alternative D.

	Unsuitable HSI=0		Unfavorable 0<HSI≤0.3		Marginal 0.3<HSI<0.7		Suitable 0.7≤HSI<1	
	WAA 2927	WAA 1601	WAA 2927	WAA 1601	WAA 2927	WAA 1601	WAA 2927	WAA 1601
Sitka black-tailed deer with predation	125,756	9,450	22,843	30,152	1,325	9,949	--	--
Mountain goat	84,305	45,369	52,497	3,005	12,056	315	1,065	863
Black bear	38,655	290	18,510	2,018	67,750	34,776	25,009	12,468
Marten	91,042	8,738	15,674	14,885	23,243	15,458	19,965	10,470
Land otter	141,517	45,599	1,397	820	--	--	7,010	3,132
Bald eagle	142,779	46,406	133	13	2,075	1,408	4,938	1,725
Red squirrel	57,052	2,320	48,862	20,593	42,353	26,513	1,658	125
Vancouver Canada goose	103,161	22,324	26,507	6,505	19,028	13,898	1,243	6,824
Red-breasted sapsucker	65,030	4,058	40,941	18,908	20,043	3,464	23,910	23,122
Hairy woodpecker	106,706	23,623	12,124	12,805	11,257	9,684	19,838	3,439
Brown creeper	118,518	36,156	11,364	9,932	--	--	20,043	3,464

Note: Numbers for WAA 2927 include VCU 78 which is outside the project area. The HSI for wolf cannot be calculated by the existing habitat capability model.

Table H-4

MIS Species Habitat Capability (acres) in the Port Houghton/Cape Fanshaw Project Area for Alternative E.

	Unsuitable HSI=0		Unfavorable 0<HSI≤0.3		Marginal 0.3<HSI<0.7		Suitable 0.7≤HSI<1	
	WAA 2927	WAA 1601	WAA 2927	WAA 1601	WAA 2927	WAA 1601	WAA 2927	WAA 1601
Sitka black-tailed deer with predation	125,749	9,450	22,588	29,845	1,588	10,257	--	–
Mountain goat	84,248	45,321	52,477	3,050	12,254	315	945	865
Black bear	38,655	290	18,168	1,998	67,352	34,126	25,749	13,137
Marten	91,047	8,735	15,001	14,185	23,840	15,976	20,035	10,655
Land otter	141,157	45,599	1,465	820	--	--	6,943	3,132
Bald eagle	142,847	46,406	133	13	2,055	1,408	4,890	1,725
Red squirrel	57,057	2,318	48,932	20,550	42,300	26,558	1,635	125
Vancouver Canada goose	103,356	22,156	26,192	6,490	19,155	14,058	1,235	6,847
Red-breasted sapsucker	64,770	3,993	41,269	18,928	20,095	3,594	23,790	23,037
Hairy woodpecker	106,039	22,920	12,594	13,200	11,197	9,837	20,095	3,594
Brown creeper	118,633	36,121	11,197	9,937	--	--	20,095	3,594

Note: Numbers for WAA 2927 include VCU 78 which is outside the project area. The HSI for wolf cannot be calculated by the existing habitat capability model.

Appendix I

Figures Supporting Recreation

Figure I-1

ROS Classes within the Port Houghton/Cape Fanshaw Project Area (Alternative A—No-Action Alternative)

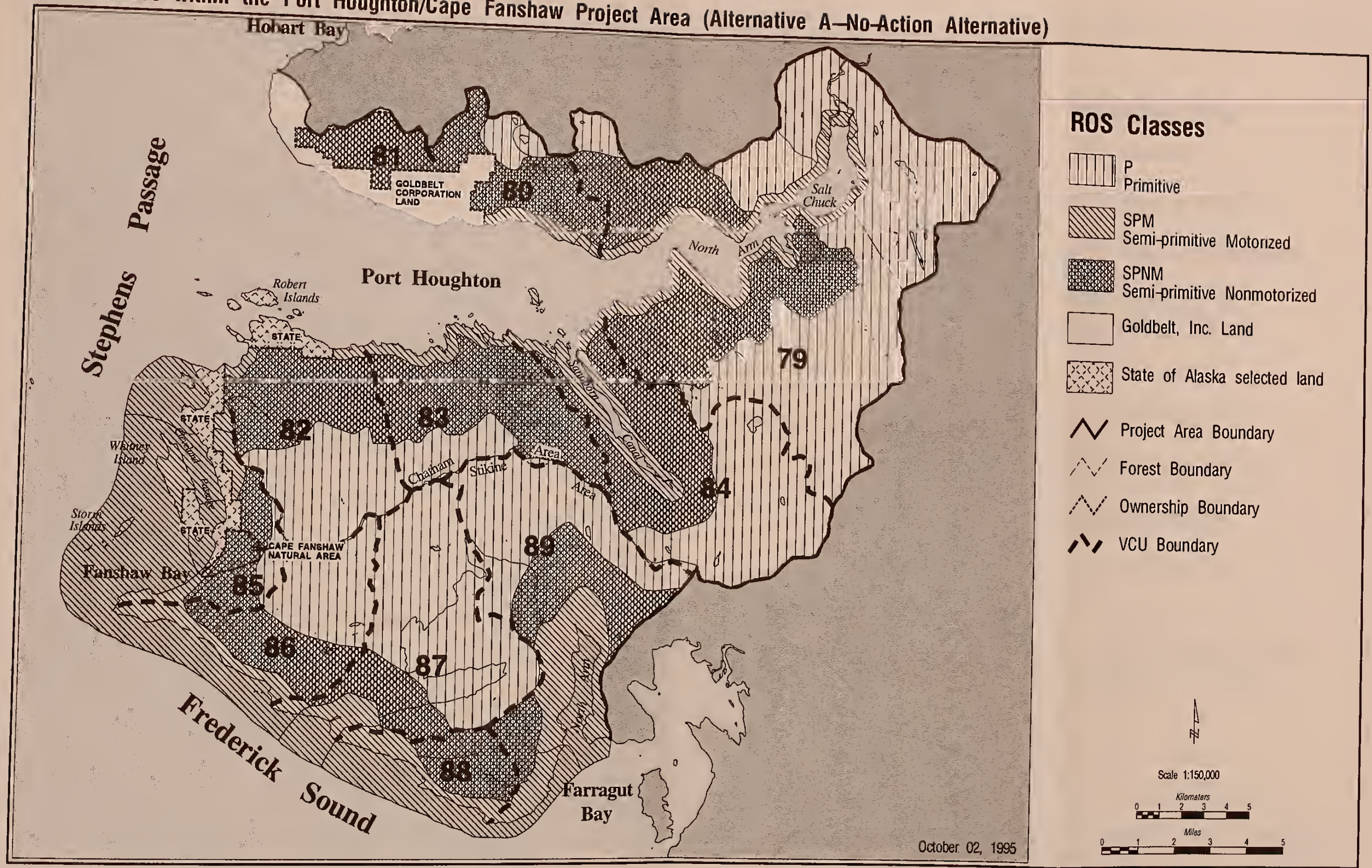


Figure I-2

ROS Classes for Recreation Places and Sites (Alternative A—No-Action Alternative)

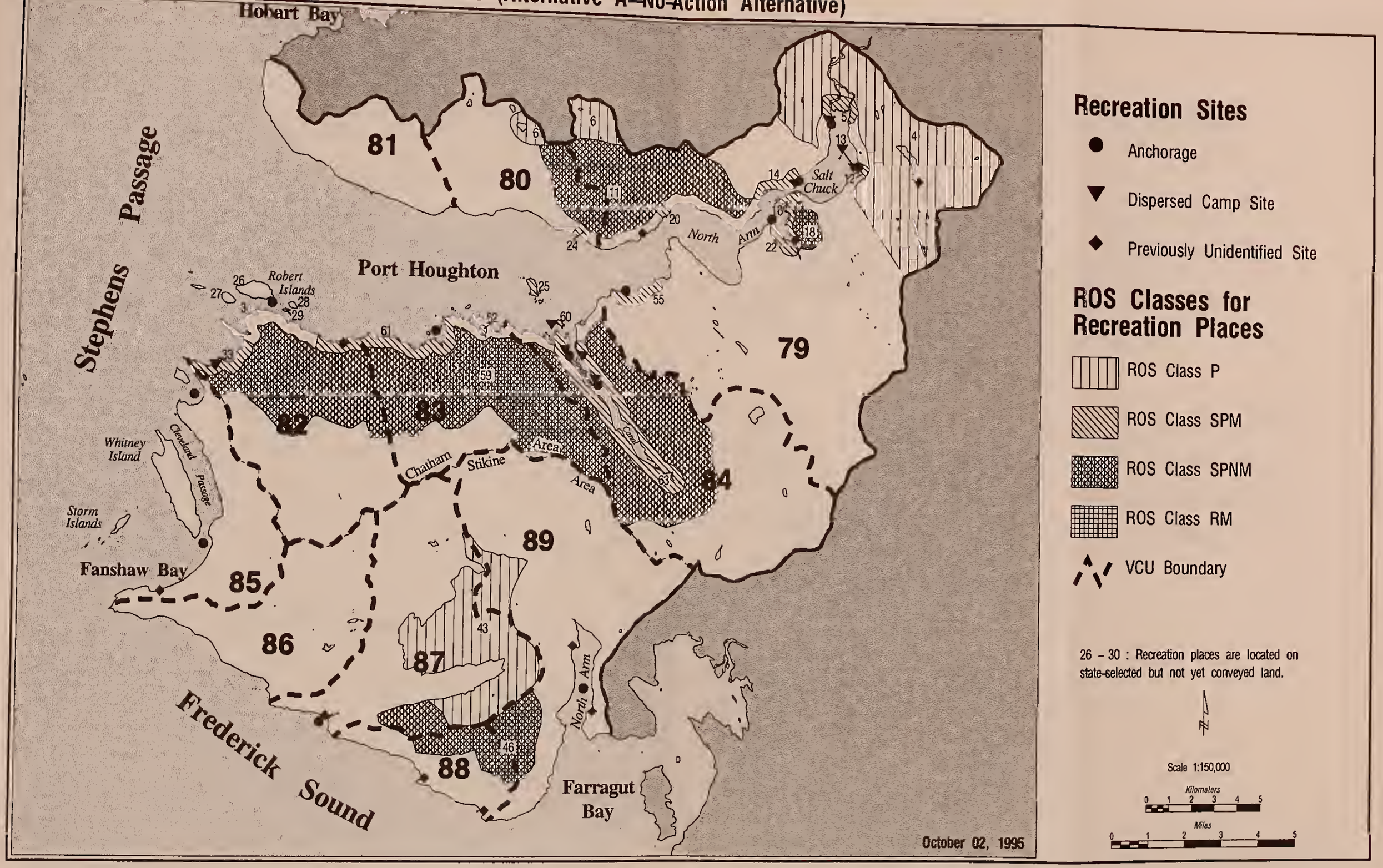
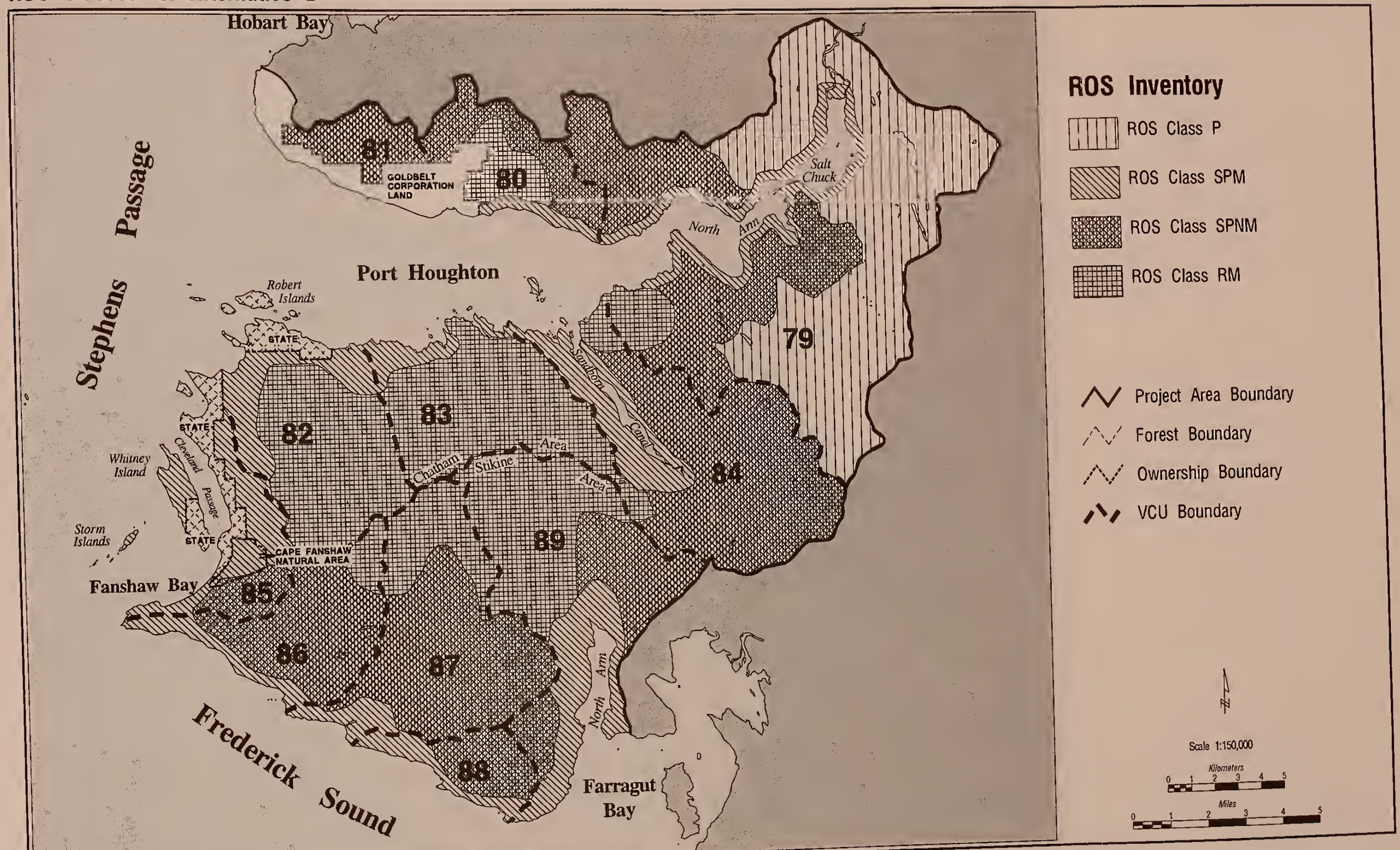


Figure I-3

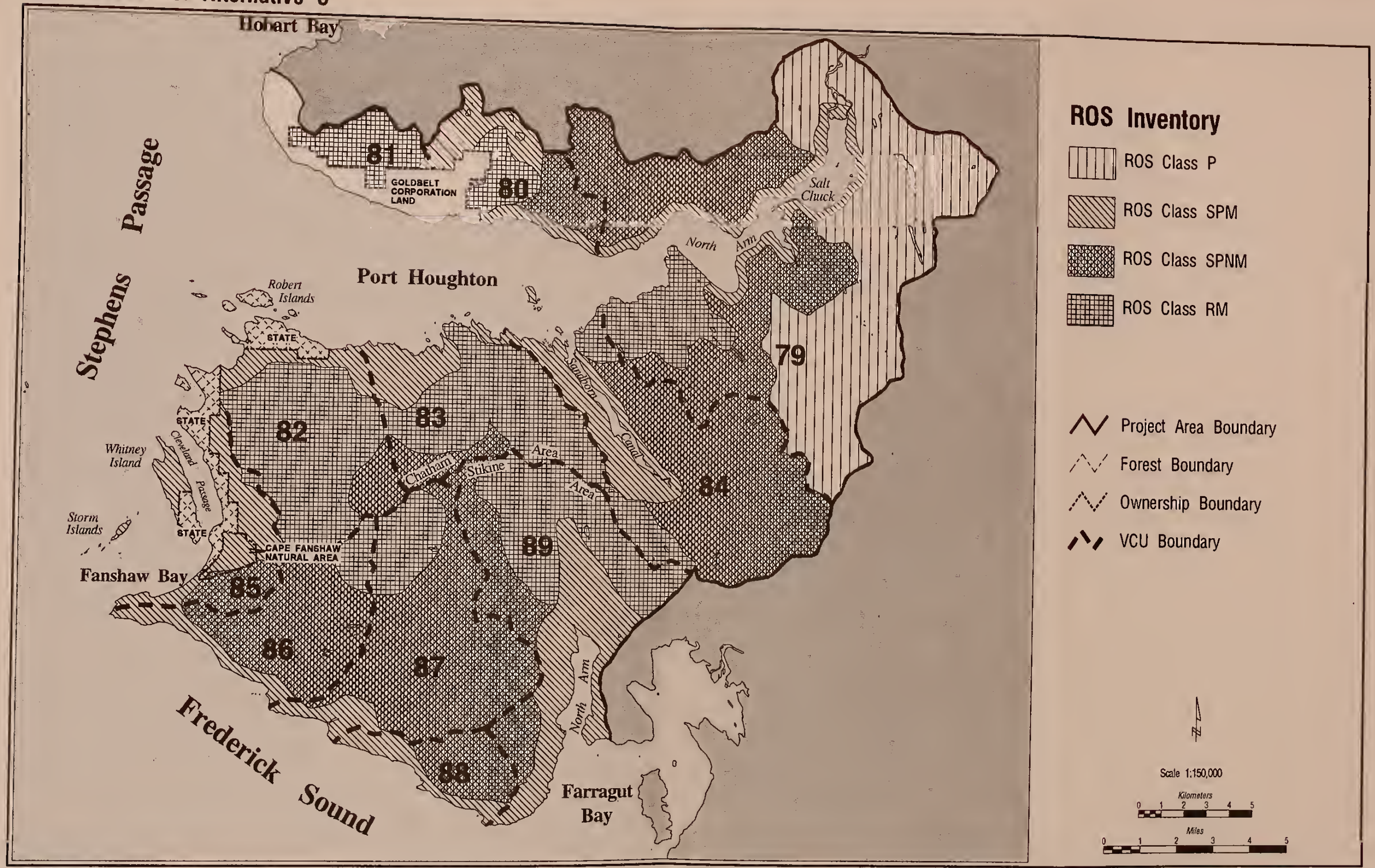
ROS Classes for Alternative B



rosinvaltbwb.gra July 19, 1995

Figure I-4

ROS Classes for Alternative C



rosinvaltbwc.gra July 19, 1995

Figure I-5

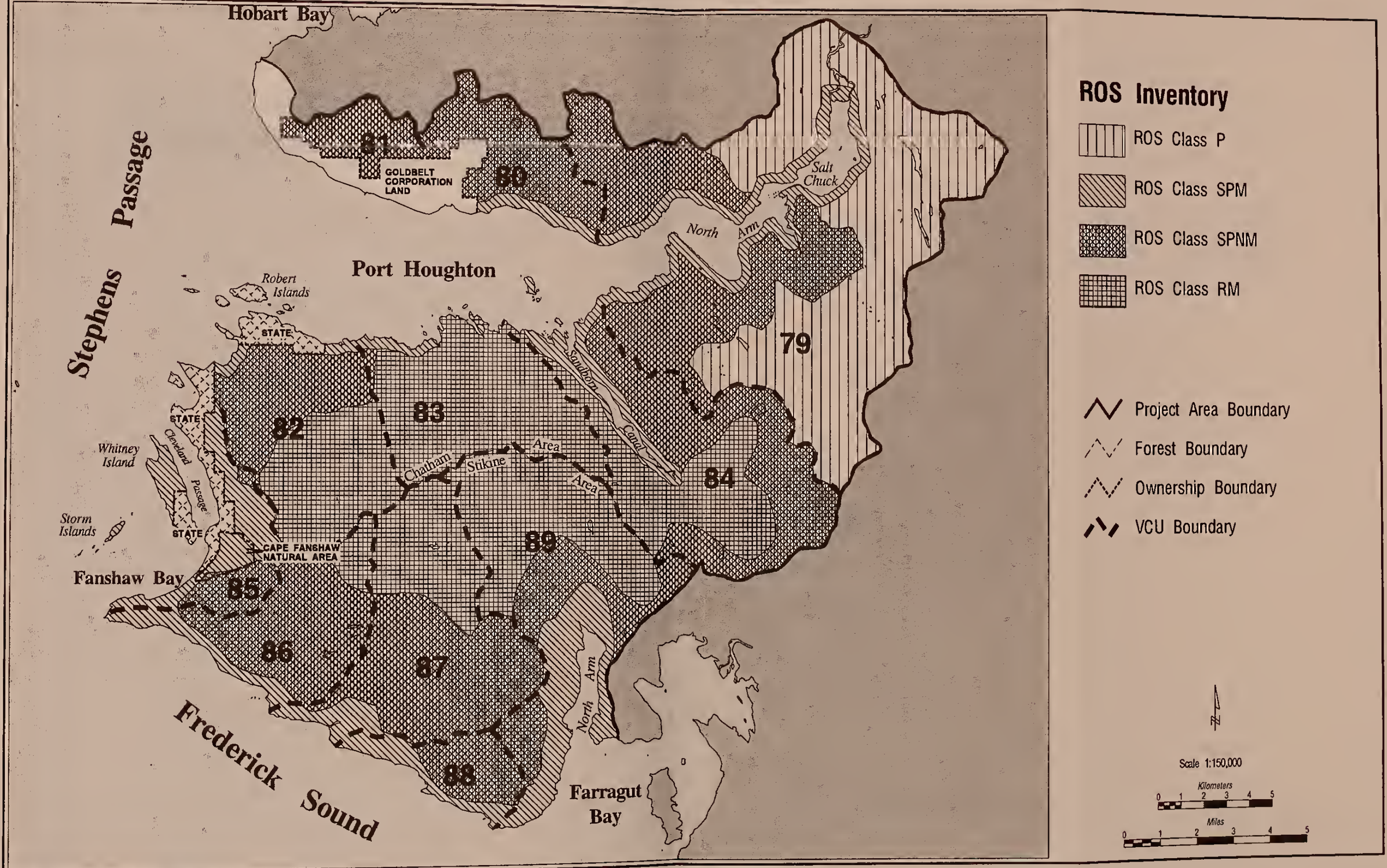
ROS Classes for Alternative D



rosinvaltbwd.gra July 19, 1995

Figure I-6

ROS Classes for Alternative E



rosinvaltbwe.gra July 19, 1995

Appendix J

Enhancement Opportunities

Appendix J

Enhancement Opportunities

Fisheries Projects

The primary fisheries enhancement opportunities are installation of fish passage facilities at existing migration barriers. East Fork Negro Creek has a 6-ft-high waterfall barrier approximately 2.75 miles upstream from its mouth. In 1986, the Forest Service constructed a fishpass at this barrier; the fishpass was determined unsuccessful. Successful completion of this enhancement project would open nearly 3.5 miles of additional habitat to anadromous fish. Alternatives B, D, and E provide road access within approximately 200 yards of the waterfall and completion of the project is expected to be economically feasible.

North Arm Creek has two large (approximately 70 ft and 50 ft high) waterfall barriers approximately one-quarter mile upstream from the estuary. The falls prevent fish passage to an extensive watershed, including more than 15 miles of suitable anadromous fish habitat. During high tide, it may be possible to access the base of the lower falls by boat from Farragut Bay. Under Alternatives B, D, and D, Road 8496002 ends a little more than one mile from the site. The extensive upstream habitat and potential access indicate a high potential for anadromous fish habitat enhancement by providing passage around the waterfalls. Further engineering feasibility and cost/benefit analyses are recommended.

Approximately one mile from the mouth of Cat Creek n Watershed 271, a set of waterfalls is a barrier to fish passage. Two main cascades greater than 20 ft in height are separated by a whitewater reach and smaller falls. Approximately 15 miles of suitable anadromous fish habitat lie upstream. However, the closest road access to the barrier under Alternatives B, C, D, and E is approximately 3 miles. The site merits further evaluation as an enhancement opportunity.

Two smaller scale barrier removal opportunities were identified during the summer 1994 field surveys. A large (8-ft high) log and debris jam on the unnamed stream that flows into Sandborn Canal from the west (Unnamed Creek #1) occurs approximately 190 yards upstream from the estuary near Unit 341099. Removal of the debris jam would facilitate access to approximately 1,600 ft of upstream habitat, including suitable spawning areas for pink salmon. Removal of a minor log jam barrier on the second tributary of Placer Creek would enhance anadromous fish use of approximately 1,000 ft of suitable upstream habitat. Road access for heavy machinery would not be necessary to conduct these enhancement projects.

Recreation Projects

Existing use of the project area is by recreationists desiring a primitive setting. The proposed enhancement projects would complement current use. The enhancement projects include development of trails. A scenic waterfall currently exists a short distance from the shoreline at a recreation place on the North Shore of Port Houghton. Current access to the waterfall is over a talus slope. Development of a short trail to the base of the falls would enable visitors to enjoy the beauty of the falls with less fear of injury. Short trails could also be developed to the Cape Fanshaw Natural Area, to a lake about a mile east of the Salt Chuck, and along the Rusty River.

An administrative cabin would be constructed at the Little Lagoon LTF site for any of the action alternatives. This cabin should be made available for recreational use after harvesting activity is completed. New recreational opportunities associated with motorized travel would result from all action alternatives.

Appendix K

Log Transfer Facilities and Associated Road System

Appendix K

Log Transfer Facilities and Associated Road System

LTF Design

The preferred log entry system should represent the best practicable alternative that minimizes impacts from placement of fill, while taking into account cost, logistics, and technology. Therefore, consideration should be given to the log-entry system (i.e., low-angle slide, vertical bulkhead) that results in the least amount of fill and damage to marine resources and habitats. Construction of a vertical bulkhead log-entry system would result in less fill (a difference of 0.20 acre) at the Rabbit Cove LTF site. A difference of 0.04 acre at the Little Lagoon LTF site and 0.06 acre at the North Point LTF site between the area occupied by a low-angle slide compared to a vertical bulkhead is considered to be inconsequential. Both log-entry systems at the Little Lagoon and North Point LTF sites would have a similar impact from the placement of fill.

Fill Structures

Fill structures should be designed and constructed to avoid introducing fine sediments and organic matter into the water. In addition to design considerations, a silt curtain (extending vertically from the water surface anchored to a depth of about -10 ft MLLW and 100 ft horizontally on either side of the central point of the LTF sites) should be placed during construction to minimize the amount of fine sediments entering the water.

Timing of In-water Construction

In-water construction, blasting, and filling should be timed to avoid impacts to marine and anadromous fisheries resources. In-water work should not occur from mid-March to mid-June to protect juvenile salmon and spawning herring. In-water blasting should not occur when humpback whales are within a 1-mile radius of the LTF sites—usually in the summer months.

Solid Waste Management

Disposal of solid wastes should follow 18 Alaska Administrative Code (AAC) 60, which requires that solid wastes be properly disposed of at an approved disposal site.

Bark Accumulation

Regulatory agencies would impose threshold limits on bark accumulation levels as a condition of permits. When accumulations exceed a threshold level of a thickness greater than 3.9 inches at any point and 100 percent coverage exceeding 1 acre in size, cleanup actions are to be implemented. Cleanup options should be identified and evaluated prior to operations in coordination with the federal and state regulatory agencies. BMPs related to site planning and design (i.e., upland log sort and storage areas, ramp angle, log-entry method) should be considered to minimize and control intertidal and shallow subtidal bark accumulations.

Bundle Speed

The speed at which log bundles enter the water when a low-angle slide system is used should be the slowest practicable speed achievable. The ATTF recommends a 3-ft-per-second entry velocity.

Surface Drainage Management

BMPs and practicable procedures should be used for the design, construction, and operation of LTFs, contiguous sort yards, and upland log storage areas to control surface water runoff into the marine environment. BMPs that should be considered include location and design of an LTF site (BMP 14.4), ensuring compliance with state and federal water quality standards (BMP 12.2), and ensuring that siltation and erosion control methods are considered during design (BMP 13.14). A reduction in surface water and sediments into marine waters would be achieved by constructing slash windrows to filter sediments out of surface waters where surface waters would drain within 300 ft of marine waters.

Control of Hydrocarbons

The log transfer system and sort yard-handling equipment should be operated and maintained to minimize petroleum and lubricating products from entering marine waters. Truck and equipment refueling and servicing operations should be located well away from marine waters. The preparation of a Spill Prevention Control and Countermeasures Plan (SPCC) should address how petroleum products and other hazardous substances would be prevented from entering waters of the United States. Sorbent materials and oil containment booms should be maintained for oil spill clean ups and fuel equipment. Other BMPs specific to oil spill prevention, servicing and refueling operations, and contingency planning include BMPs 12.8 and 12.9.

Onshore Log Storage

Preference should be given to onshore log storage and the placing of logs directly onto a barge from land.

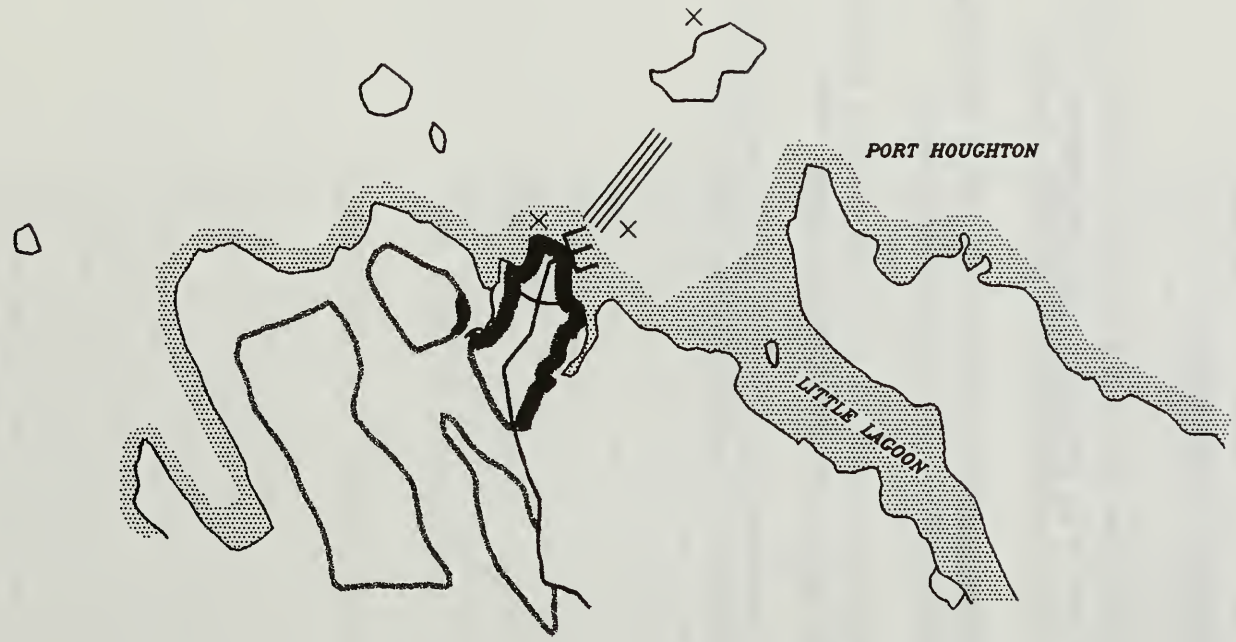
Facility Maintenance and Reclamation

The permittee should maintain the LTF in good condition and in accordance with approved plans and drawings. When an LTF is closed, the permittee should restore the LTF area to a satisfactory condition. This could include removal of bark and wood debris from marine waters and the placement of cobbles to provide suitable substrate for macroalgae attachment.

Humpback Whales

Standards and guidelines have been developed by the USFS, applicable to LTF operations, to provide for the protection and maintenance of whale habitat. These guidelines for USFS permitted or approved activities include:

- Avoid intentional aircraft flights below 500 ft aboveground level in known vicinity of whales, when weather ceilings permit.
- Avoid intentional approach in a vessel of 100 or more ft in length to within ¼ mile of whales, when safe passage exists.
- Avoid intentional approach in a vessel of less than 100 ft in length to within 100 yds of whales, when safe passage exists.



LEGEND

100' VISUAL BUFFER AREA	
330' EAGLE TREE BUFFER FOR HISTORICAL NEST NO LONGER PRESENT	
POTEN. SORT YARD AND/OR CAMP AREAS	
STREAM	
SHORELINE	
ROCK	
PROPOSED ROAD	
POTENTIAL LOG RAFT SITE	

FILE: C:\CAD\2437-01\FIG4

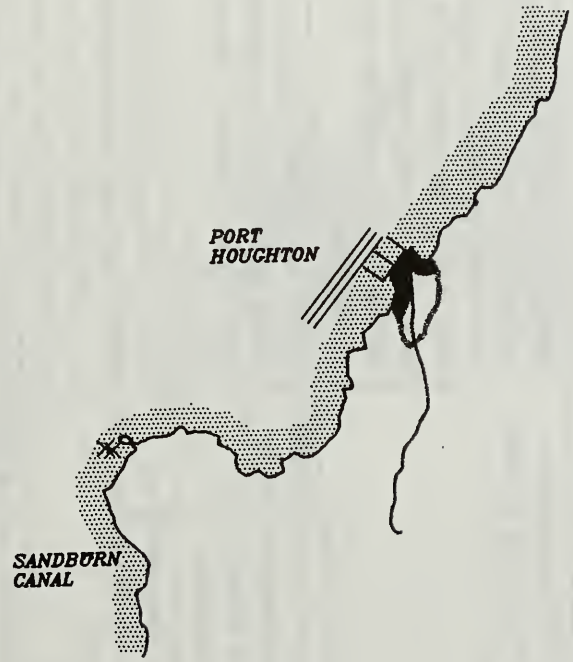
0 660 1320
SCALE IN FEET

N

Figure 1
Port Houghton/Cape Fanshaw
Little Lagoon
Proposed LTF Plan

Appendix Table K-1. LTF Siting Guidelines established by the Alaska Timber Task Force, 1985 - Little Lagoon.

S1. **Proximity to Rearing and Spawning Areas**: Siting of LTFs and log storage facilities within 300 ft of the mouths of anadromous fish streams, or in areas known to be important for fish spawning or rearing, is normally prohibited.	LTF site is within 300 ft of the mouth of a Class I stream on the eastern end of the LTF site. A known Pacific herring spawning area is 0.5 miles east of the site.
S2. **Protected Locations**: LTFs and log raft storage facilities should be sited in weather-protected waters with bottoms suitable for anchoring and with at least 20 acres for temporary log storage and log booming.	Eastern lee and offshore islands provide some protection from open waters.
S3. **Upland Facility Requirements**: LTFs generally should be sited in proximity to at least five acres of relatively flat uplands. There should also be a body of water sufficient to provide a minimum of 60 lineal feet of facility face.	At least 5 acres of relatively flat land occurs adjacent to this site. The operating face on the water exceeds 50 lineal feet.
S4. **Safe Access to a Facility from the Uplands**: To provide safe access to the LTF and adjoining log sort yard, the facility should be sited where access roads to the facility can maintain a grade of 10 percent or less for trucks and 4 percent or less for specialized equipment.	Access road grade is about 7 percent for several hundred feet.
S5. **Bark Dispersal**: LTFs should be sited along or adjacent to straits and channels or deep bays where currents may be strong enough to disperse sunken or floating wood debris. Siting LTFs in embayments with sills or other natural restrictions to tidal exchange should be avoided.	Moderate slope and depth at site along with biological indications of moderate currents at this site should help to disperse bark and reduce accumulation.
S6. **Site Productivity**: Sites for in-water storage and/or transfer of logs should be located in areas having the least productive intertidal and subtidal zones.	Intertidal and subtidal productivity are not particularly more or less productive than the majority of areas with similar habitats within the region. The relatively flat sand delta on the eastern end of the LTF site appears to be a relatively high productivity area for hardshell clams. Shifting the LTF site to the west would avoid impacts to the sand delta.
S7. **Sensitive Habitat**: LTFs and log raft storage should not be sited on or adjacent to (i.e., near enough to effect) extensive tideflats, salt marshes, kelp or eelgrass beds, seaweed harvest areas or shellfish concentrations.	Eastern edge of site is adjacent to a salt marsh. There is a small patch of eelgrass (approximately 5 ft by 5 ft) within the sand flat area at the eastern edge of the proposed site.
S8. **Safe Marine Access to Facilities**: Log rafting and storage facilities should be safely accessible to tug boats with log rafts at most tides on most winter days.	The LTF site is wide and deep enough to afford relatively safe and easy passage of tug boats, log rafts, etc. Configuration of the area provides relatively good protection from weather and open water at this site.
S9. **Storage and Rafting**: Logs, log bundles, and log rafts should be stored in areas where they will not ground at low tide. A minimum depth of 40 feet or deeper measured at MLLW for log rafts are preferred.	The site is large enough and deep enough to provide sufficient storage of logs.
S10. **Avoid Bald Eagle Nest Trees**: Site LTFs to avoid bald eagle nests. No project construction or operations should be closer than 330 feet to any bald eagle nest tree.	One historical bald eagle nest occurs within 200 ft of the LTF. The nest is no longer being utilized by bald eagles, and has been abandoned at least since 1981. A variance will be needed.



LEGEND

100' VISUAL BUFFER AREA	
POTEN. SORT YARD AREA	
SHORELINE	
ROCK	×
PROPOSED ROAD	
POTENTIAL LOG RAFT SITE	

FILE: C:\CAD\2437-01\FIG5

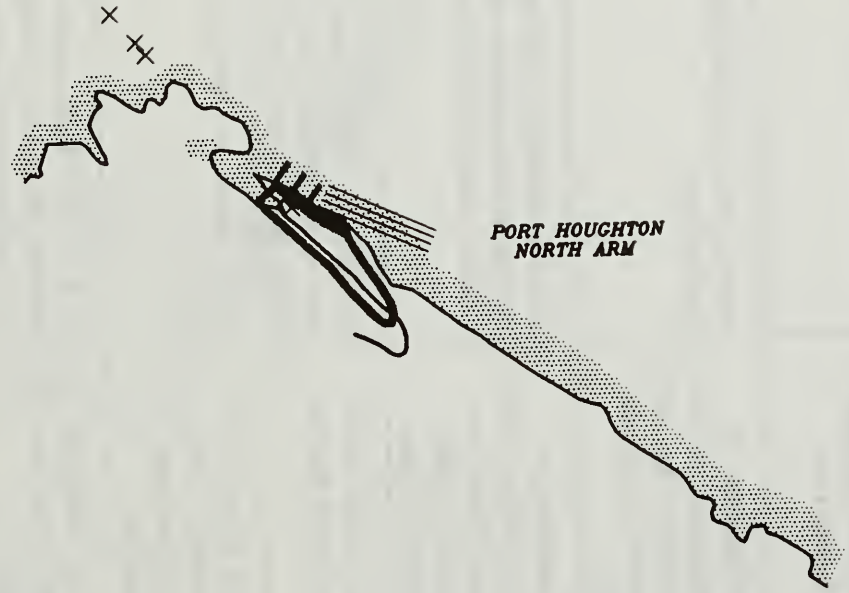
0 660 1320
SCALE IN FEET

N

Figure 2
Port Houghton/Cape Fanshaw EIS
Rabbit Cove
Proposed LTF Plan

Appendix Table K-2. LTF Siting Guidelines established by the Alaska Timber Task Force, 1985 - Rabbit Cove.

S1. **Proximity to Rearing and Spawning Areas**: Siting of LTFs and log storage facilities within 300 ft of the mouths of anadromous fish streams, or in areas known to be important for fish spawning or rearing, is normally prohibited.	No salmon streams occur within ½ mile of the site. No documented herring spawn occurs near the site.
S2. **Protected Locations**: LTFs and log raft storage facilities should be sited in weather-protected waters with bottoms suitable for anchoring and with at least 20 acres for temporary log storage and log booming.	Site is on a north to northeast facing rock outcrop in a semi-protected area. Bottom substrates are suitable for anchoring. More than 20 acres are available for temporary log storage.
S3. **Upland Facility Requirements**: LTFs generally should be sited in proximity to at least five acres of relatively flat uplands. There should also be a body of water sufficient to provide a minimum of 60 lineal feet of facility face.	There are only 3 acres of flat land adjacent to this site. The operating face on the water exceeds 60 lineal ft.
S4. **Safe Access to a Facility from the Uplands**: To provide safe access to the LTF and adjoining log sort yard, the facility should be sited where access roads to the facility can maintain a grade of 10 percent or less for trucks and 4 percent or less for specialized equipment.	Access grade is currently about 12 percent for several hundred feet.
S5. **Bark Dispersal**: LTFs should be sited along or adjacent to straits and channels or deep bays where currents may be strong enough to disperse sunken or floating wood debris. Siting LTFs in embayments with sills or other natural restrictions to tidal exchange should be avoided.	Substrate conditions in the subtidal area and biological features indicate moderate water movement suggesting moderate bark dispersal and accumulation.
S6. **Site Productivity**: Sites for in-water storage and/or transfer of logs should be located in areas having the least productive intertidal and subtidal zones.	Intertidal and subtidal productivity are not particularly more or less productive than the majority of areas with similar habitat within the region.
S7. **Sensitive Habitat**: LTFs and log raft storage should not be sited on or adjacent to (i.e., near enough to effect) extensive tideflats, salt marshes, kelp or eelgrass beds, seaweed harvest areas or shellfish concentrations.	No known sensitive habitats are in close proximity to the site.
S8. **Safe Marine Access to Facilities**: Log rafting and storage facilities should be safely accessible to tug boats with log rafts at most tides on most winter days.	The LTF site is wide enough and deep enough to afford relatively safe and easy passage of tug boats, log rafts, etc. Configuration of the area provides relatively good protection from weather and open water at this site.
S9. **Storage and Rafting**: Logs, log bundles, and log rafts should be stored in areas where they will not ground at low tide. A minimum depth of 40 feet or deeper measured at MLLW for log rafts are preferred.	The site is large enough and deep enough to provide sufficient area for rafting and storage of logs.
S10. **Avoid Bald Eagle Nest Trees**: Site LTFs to avoid bald eagle nests. No project construction or operations should be closer than 330 feet to any bald eagle nest tree.	There is no known eagle nest within 330 ft of the proposed site. The closest bald eagle nest occurs 1,000 ft northeast of the proposed LTF site.



LEGEND

- VISUAL BUFFER AREA
- POTEN. SORT YARD AREA
- STREAM
- SHORELINE
- ROCK
- PROPOSED ROAD
- POTENTIAL LOG RAFT SITE

FILE: C:\CAD\2437-01\FIG8

0 660 1320
SCALE IN FEET

N

Figure 3
Port Houghton/Cape Fanshaw EIS
North Point
Proposed LTF Plan

Appendix Table K-3. LTF Siting Guidelines established by the Alaska Timber Task Force, 1985 - North Point.

S1. **Proximity to Rearing and Spawning Areas**: Siting of LTFs and log storage facilities within 300 ft of the mouths of anadromous fish streams, or in areas known to be important for fish spawning or rearing, is normally prohibited.	No Class I streams occur within 1 mile of the proposed LTF site. No documented herring spawn occurs within proximity to the site.
S2. **Protected Locations**: LTFs and log raft storage facilities should be sited in weather-protected waters with bottoms suitable for anchoring and with at least 20 acres for temporary log storage and log booming.	Site is on a northeast facing rock knob in a semiprotected area.
S3. **Upland Facility Requirements**: LTFs generally should be sited in proximity to at least five acres of relatively flat uplands. There should also be a body of water sufficient to provide a minimum of 60 lineal feet of facility face.	There are at least 5 acres of relatively flat land adjacent to this site. The operating face on the water exceeds 60 lineal feet.
S4. **Safe Access to a Facility from the Uplands**: To provide safe access to the LTF and adjoining log sort yard, the facility should be sited where access roads to the facility can maintain a grade of 10 percent or less for trucks and 4 percent or less for specialized equipment.	Access grades are about 8 percent for several hundred feet.
S5. **Bark Dispersal**: LTFs should be sited along or adjacent to straits and channels or deep bays where currents may be strong enough to disperse sunken or floating wood debris. Siting LTFs in embayments with sills or other natural restrictions to tidal exchange should be avoided.	Moderate slope and depth at proposed LTF site along with biological indications of moderate currents should help to disperse bark and reduce its accumulation.
S6. **Site Productivity**: Sites for in-water storage and/or transfer of logs should be located in areas having the least productive intertidal and subtidal zones.	Intertidal and subtidal productivity are not particularly more or less productive than the majority of areas with similar habitat within the region.
S7. **Sensitive Habitat**: LTFs and log raft storage should not be sited on or adjacent to (i.e., near enough to effect) extensive tideflats, salt marshes, kelp or eelgrass beds, seaweed harvest areas or shellfish concentrations.	A salt marsh occurs behind the rock knob about 200 ft northwest of the proposed site. The marsh is about 80 to 100 ft wide and slopes into a tidewater inlet.
S8. **Safe Marine Access to Facilities**: Log rafting and storage facilities should be safely accessible to tug boats with log rafts at most tides on most winter days.	The LTF site is wide enough and deep enough to afford relatively safe and easy passage of tug boats, log rafts, etc. Configuration of the area provides relatively good protection from weather and open water.
S9. **Storage and Rafting**: Logs, log bundles, and log rafts should be stored in areas where they will not ground at low tide. A minimum depth of 40 feet or deeper measured at MLLW for log rafts are preferred.	The site is large enough and deep enough to provide sufficient storage of logs.
S10. **Avoid Bald Eagle Nest Trees**: Site LTFs to avoid bald eagle nests. No project construction or operations should be closer than 330 feet to any bald eagle nest tree.	There is an eagle nest tree (#8 as identified by the USFWS in the 1989 map) about 500 ft north of the proposed site.

PORT HOUGHTON EIS
Transportation System

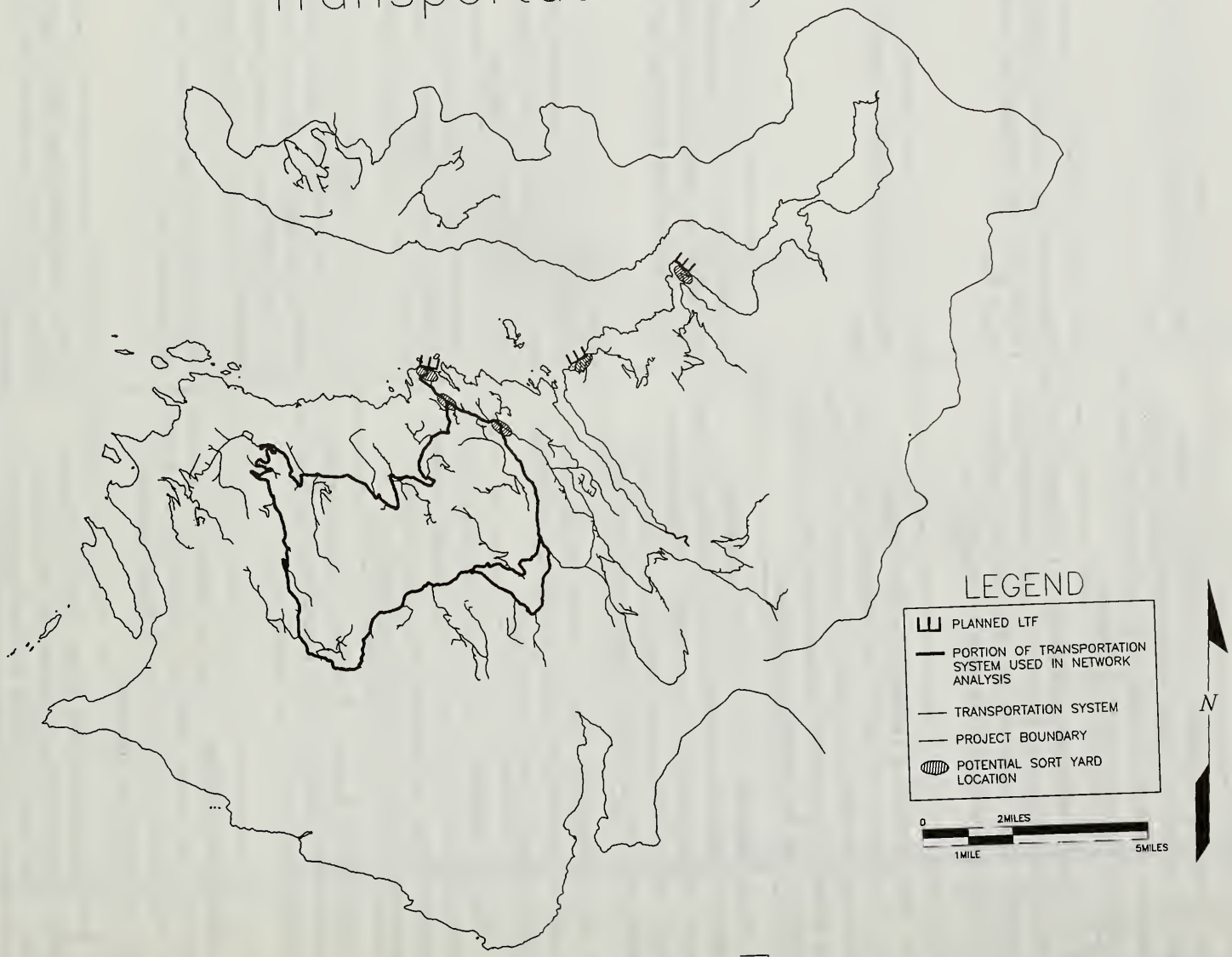
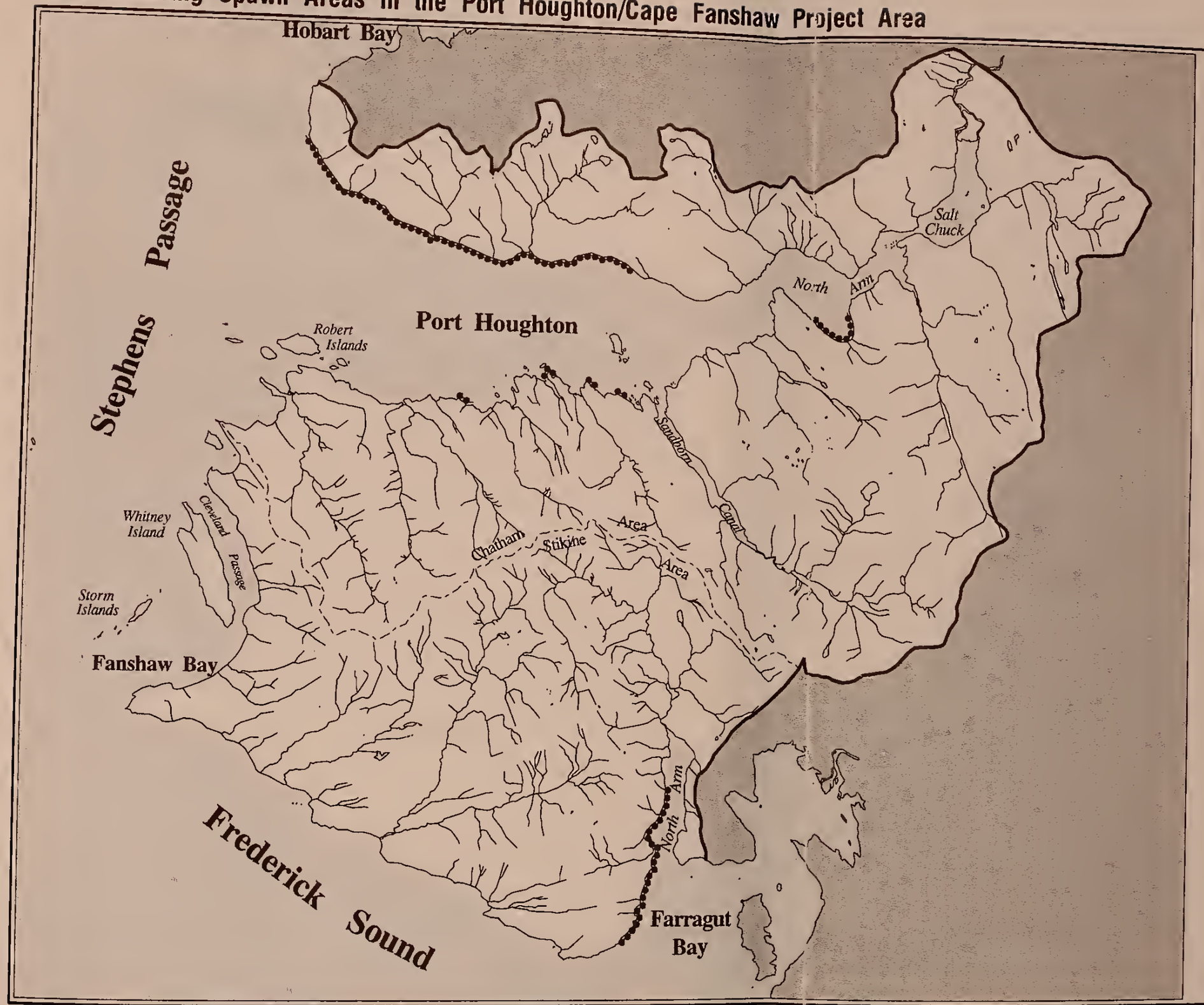


FIGURE 7

Known Herring Spawn Areas in the Port Houghton/Cape Fanshaw Project Area



Spawn Areas

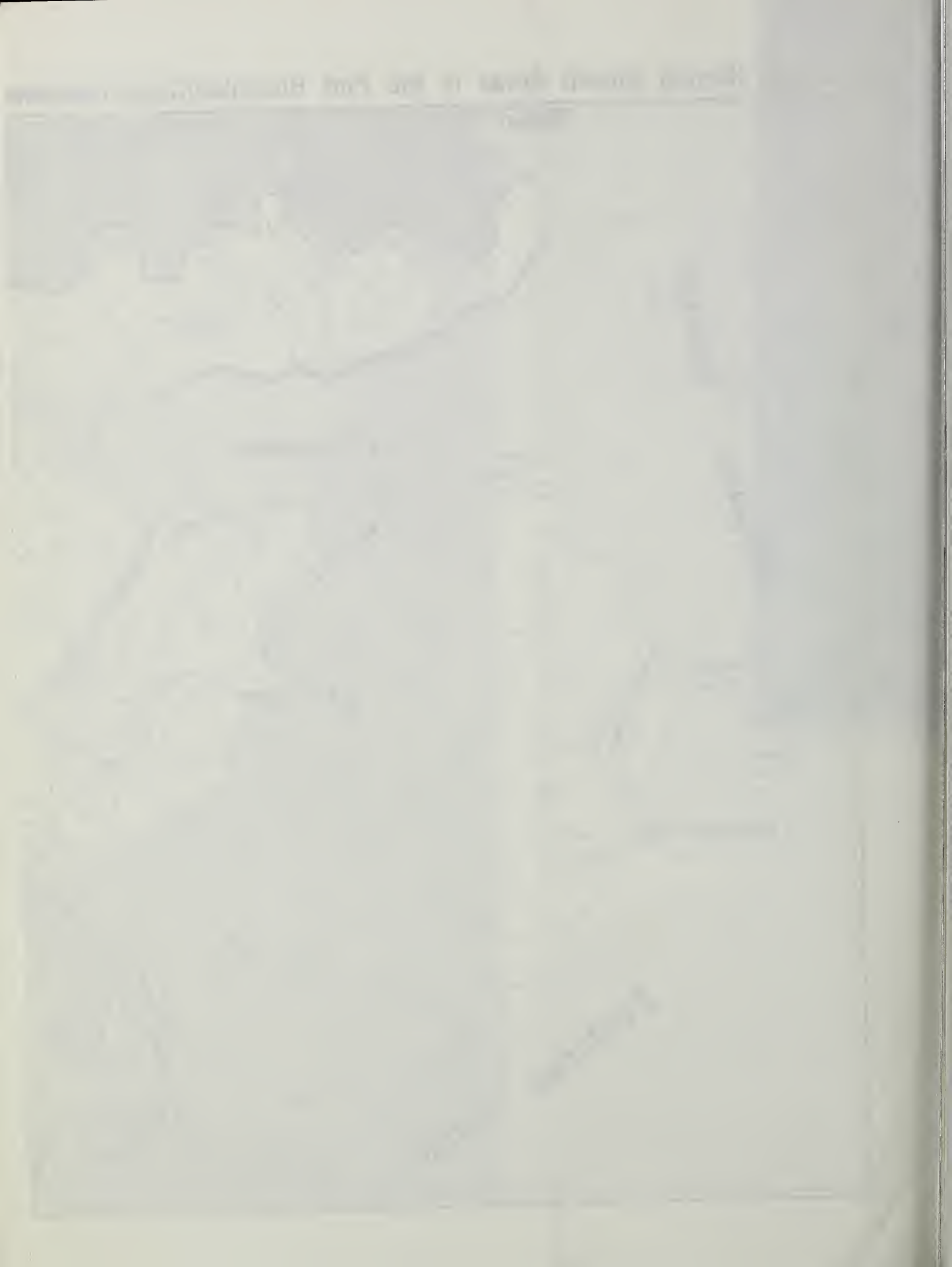
- Herring Spawn Area
- Project Area Boundary
- Forest Area Boundary
- Stream

Source: ADF&G (1994)

Scale 1:150,000

Kilometers 0 1 2 3 4 5

Miles 0 1 2 3 4 5



Appendix L

Mitigation Measures

Appendix L

Mitigation Measures

Mitigation measures may be specific to units and roads or applicable to specific areas in the overall project area where a resource concern occurs. The mitigation measures specific to a unit or road may include an enlarged stream buffer greater than 100 ft., full suspension logging to avoid stream damage, a partial harvest prescription to avoid visual impacts, or snag retention to provide standing timber for wildlife use. These measures are described in the unit and road cards. The approach used to mitigate concerns for each resource is described below.

Timber

Mitigation measures for timber resources were developed specific to each unit through silvicultural prescriptions and adaptive management opportunities. The silvicultural systems used to mitigate timber resource concerns are described in detail in Appendix A under *Silvicultural Systems and Methods Applicable to the Project Area*.

Marine

The majority of the mitigation measures applicable to the construction and use of LTF sites pertain to following compliance with the ATTF guidelines as described in Appendix C. Other mitigation considerations are described below.

LTF Design

The preferred log entry system should represent the best practicable alternative that minimizes impacts from placement of fill, while taking into account cost, logistics, and technology. Therefore, consideration should be given to the log-entry system (i.e., low-angle slide, vertical bulkhead) that results in the least amount of fill and damage to marine resources and habitats. Construction of a vertical bulkhead log-entry system would result in less fill (a difference of 0.20 acre) at the Rabbit Cove LTF site. A difference of 0.04 acre at the Little Lagoon LTF site and 0.06 acre at the North Point LTF site between the area occupied by a low-angle slide compared to a vertical bulkhead is considered to be inconsequential. Both log-entry systems at the Little Lagoon and North Point LTF sites would have a similar impact from the placement of fill.

Fill Structures

Fill structures should be designed and constructed to avoid introducing fine sediments and organic matter into the water. In addition to design considerations, a silt curtain (extending vertically from the water surface anchored to a depth of about -10 ft MLLW and 100 ft horizontally on either side of the central point of the LTF sites) should be placed during construction to minimize the amount of fine sediments entering the water.

Timing of In-water Construction

In-water construction, blasting, and filling should be timed to avoid impacts to marine and anadromous fisheries resources. In-water work should not occur from mid-March to mid-June to protect juvenile salmon and spawning herring. In-water blasting should not occur when humpback whales are within a 1-mile radius of the LTF sites—usually in the summer months.

Solid Waste Management

Disposal of solid wastes should follow 18 Alaska Administrative Code (AAC) 60, which requires that solid wastes be properly disposed of at an approved disposal site.

Bark Accumulation

Regulatory agencies would impose threshold limits on bark accumulation levels as a condition of permits. When accumulations exceed a threshold level of a thickness greater than 3.9 inches at any point and 100 percent coverage exceeding 1 acre in size, cleanup actions are to be implemented. Cleanup options should be identified and evaluated prior to operations in coordination with the federal and state regulatory agencies. BMPs related to site planning and design (i.e., upland log sort and storage areas, ramp angle, log-entry method) should be implemented to minimize and control intertidal and shallow subtidal bark accumulations.

Bundle Speed

The speed at which log bundles enter the water when a low-angle slide system is used should be the slowest practicable speed achievable. The ATTF recommends a 3-ft-per-second entry velocity.

Surface Drainage Management

BMPs and practicable procedures should be used for the design, construction, and operation of LTFs, contiguous sort yards, and upland log storage areas to control surface water runoff into the marine environment. BMPs that should be considered include location and design of an LTF site (BMP 14.4), ensuring compliance with state and federal water quality standards (BMP 12.2), and ensuring that siltation and erosion control methods are considered during design (BMP 13.14). A reduction in surface water and sediments into marine waters would be achieved by constructing slash windrows to filter sediments out of surface waters where surface waters would drain within 300 ft of marine waters

Control of Hydrocarbons

The log transfer system and sort yard-handling equipment should be operated and maintained to minimize petroleum and lubricating products from entering marine waters. Truck and equipment refueling and servicing operations should be located well away from marine waters. The preparation of a Spill Prevention Control and Countermeasures Plan (SPCC) should address how petroleum products and other hazardous substances would be prevented from entering waters of the United

States. Sorbent materials and oil containment booms should be maintained for oil spill clean ups and fuel equipment. Other BMPs specific to oil spill prevention, servicing and refueling operations, and contingency planning include BMPs 12.8 and 12.9.

Onshore Log Storage

Preference should be given to onshore log storage and the placing of logs directly onto a barge from land.

Facility Maintenance and Reclamation

The permittee should maintain the LTF in good condition and in accordance with approved plans and drawings. When an LTF is closed, the permittee should restore the LTF area to a satisfactory condition. This could include removal of bark and wood debris from marine waters and the placement of cobbles to provide suitable substrate for macroalgae attachment.

Humpback Whales

Standards and guidelines have been developed by the USFS, applicable to LTF operations, to provide for the protection and maintenance of whale habitat. These guidelines for USFS permitted or approved activities include:

- Avoid intentional aircraft flights below 500 ft aboveground level in known vicinity of whales, when weather ceilings permit.
- Avoid intentional approach in a vessel of 100 or more ft in length to within ¼ mile of whales, when safe passage exists.
- Avoid intentional approach in a vessel of less than 100 ft in length to within 100 yds of whales, when safe passage exists.

Wildlife

Silvicultural Opportunities That Enhance Wildlife Use

Slash Retention - Slash retention in harvested units provides cover for small wildlife species, notably amphibians, small mammals, and songbirds. Populations of these species are typically greater in slash retention areas, compared to cutover burned areas or harvest areas where slash is physically removed, because of the increased wildlife cover and foraging areas provided by the fallen timber. Plants and insects that occur in slash are closer to ground-foraging wildlife species. Slash will additionally intercept water runoff, thereby creating ponding effects and providing an immediate water source to wildlife. Slash retention is routinely conducted in clearcut areas within Southeast Alaska and is planned for all units proposed for harvest.

Snag Retention - Snag retention in units is recommended to ensure that snags remain available for cavity-nesting species following harvest and as clearcuts regenerate. Snags are used by wildlife for cavity sites, nesting platforms, sources of feeding substrate, plucking posts, singing or drumming sites, food caches, courtship locations, overwintering sites, roosting, lookout posts, hunting and

hawking perches, fledgling sites, dwellings or dens, loafing sites, nesting under bark, communal nesting or nursery colonies, and thermally regulated habitat (Payne and Bryant 1994).

Green Tree Retention - This type of silvicultural treatment would occur in units identified as clearcut with reserves, overstory removal, and shelterwood with reserves. Green trees provide a source of standing residuals for snag recruitment and serve as down woody material when the snags blow over. The uprooted soils associated with the down trees may also provide the mineral soils needed to decrease podzolization. Standing green trees provide increased three-dimensional structure to cutover areas.

Feathering - Unit feathering is an approach used to decrease the visual impacts of clearcutting. Some units would retain cull trees within 75 to 100 ft. of the unit boundary to allow a transition between the cut unit and the adjacent old-growth timber. Feathering can also secure the newly created forest edge against windthrow. A feathered edge sustains lower predation rates than an abrupt edge (Ratti and Rese 1988). Retaining old-growth patches along edges of managed stands can increase effective old-growth area and provide greater benefits to deer over time (Kirchoff 1994).

Specific Wildlife Species Mitigation Measures

Seabird Rookeries - This would include the Arctic tern nesting colony. Aircraft should avoid flying over the known nesting area which is in vicinity of the Salt Chuck. Based on the location of LTF facilities and the harvest areas and roads, activities can avoid this nesting colony.

Vancouver Canada Goose - As recommended in the TLMP (1991) Standards and Guidelines management activities should be avoided within 410 ft of land designated as suitable Vancouver Canada Goose habitat during nesting, brood rearing, molting and wintering periods, if geese are present.

Waterfowl - Human disturbance of waterfowl habitat should be minimized by regulating human use in important areas (such as the Sandborn Canal). Aircraft flights should be:

1) 1,500 ft above ground level for helicopters;
2) 500 ft above ground level for fixed-wing aircraft;
3) 1 mile horizontal distance and 1,000 ft above ground level for helicopters when ducks are molting; and
4) 1,000 ft above ground level for fixed-wing aircraft when geese are molting.

Mountain Goat - To avoid human harassment of goats, road building and timber harvest should be restricted to June through October in areas of goat activity to minimize disturbance during the winter months when the goats are utilizing old-growth habitat (Fox et al. 1989). Float planes and helicopters should avoid areas used by mountain goats. No hunting of mountain goats should occur during timber harvest. Following harvest, no hunting of mountain goats should occur with motorized vehicles. For Alternative E, six units and associated roads should

be considered for deletion to avoid direct impacts to suitable habitat. These units are 341112 to 341116 which would represent a loss of 8.0 MMBF.

Sharp-shinned and Red-tailed Hawks - Located nests of these species should be protected during timber harvest both from noise and direct loss. Harvest activity should be avoided within 100 yards of the nest and the tree, and surrounding 100 yards of old-growth forest should be protected from logging.

Great Blue Heron - As recommended in TLMP (1991) Standards and Guidelines, no harvest or road construction or related ground disturbing activities should occur within ⅛ mile of any nest. Aircraft flights over this area should have a minimum flight elevation of 660 ft within ¼ mile of recently occupied nests (Suring et al. 1993).

Wolf - The observed wolf den should be protected from disturbance during harvest. Its location should remain confidential. A minimum 100-yard disturbance area (no entry) is recommended.

Bald Eagle - Helicopter pilots should be instructed to minimize noise disturbance to nesting bald eagles by ascending and descending in an angle towards the open water rather than land. Employees should be advised to avoid disturbing eagles.

Big Game - To avoid overharvest of big game, no hunting of big game with motorized vehicles should occur during harvesting operations. Following harvest, deer hunting with motorized vehicles should not be permitted, although hunting of moose and beer may be allowed. Hunting of all big game species should be closely monitored. If monitoring indicates the potential for significant impacts, more stringent regulations may be required.

Biodiversity

Mitigation measures to ensure the biological diversity is preserved in the project area are based on old-growth forest retention as described in the *Biodiversity* section of Chapter 4.

Threatened, Endangered, and Sensitive Species

Applicable mitigation measures are described in the *Biological Evaluation*.

Fisheries and Water Resources

Mitigation for the effects of timber harvesting, roads and associated activities in the Port Houghton/Cape Fanshaw project area include stream buffers, road closures, enhancement projects, erosion and sedimentation controls, and other specific BMPs designed to prevent or reduce adverse water quality impacts.

Road Closures

Closing roads after timber harvesting has been completed would eliminate the traffic that erodes road tread. Permanent road closures that remove drainage features, regrade and revegetate slopes can limit erosion and sedimentation impacts by restoring soil infiltration and natural drainage patterns. Recommendations for closure of temporary or short-term roads (BMP 14.24) may be implemented on 21 to 23 percent of the total miles of road proposed under timber harvest alternatives.

Specific road closures were recommended where roads cross potential slope stability hazards (Class III), V-notches, and salmon streams. Many of these recommendations have been incorporated in alternatives by designating roads to be constructed for temporary use only.

Physical Resources

Areas of Class IV soils (Very High Hazard Soils) have been avoided through deletion and/or movement of units and roads to avoid these areas. Other approaches involved increasing stream buffer widths and partial harvests to minimize soil exposure and partial or full suspension logging methods as described in the unit and road summary cards. BMPS, as described in the monitoring plan, would be implemented to ensure that adverse impacts to the soils resource would be avoided. Large bogs, fens, and peatlands and floodplains were avoided to the extent possible during road layout. Culvert placement in wetland areas and large floodplains is recommended to allow drainage and subsurface water movement and surface water flow during floodflow water volumes, respectively.

Subsistence

Beach Fringe and Estuary Protection

Under the 1991 TLMP Revision the beach fringe and estuary land use designation emphasizes management of beach fringe and estuary habitats to favor wildlife, fish, recreation, visual, and other associated resources. Beach fringe is defined as land up to 500 ft inland from mean high tide. An estuary is defined as a flat intertidal and upland area that occurs at the heads of bays and mouths of streams that is up to 1,000 ft inland from mean high tide. Estuaries include beach fringe habitats associated with these areas are managed as natural, undisturbed conditions. Although LTFs and associated roads are allowed in the beach fringe, other roads not associated with the LTFs are excluded from these buffer areas.

The areas of subsistence use in the project area are predominantly beach fringe areas. These areas were precluded from proposed timber harvest because of their land use designation. Only the minimum road construction and timber harvest necessary for LTF placement and operation is proposed under any action alternative. Harvesting beach fringe and estuary related resources, including firewood for subsistence use is allowed, subject to applicable federal and state regulations. Alternative B was developed with units a minimum of 1 mile from the shoreline on the south shore of Port Houghton between the Sandborn Canal and the shore of Cape Fanshaw where most conflict would occur between subsistence use areas and timber harvest. Implementation of this alternative would allow large portions of these hunting and harvesting areas to remain undisturbed.

Road Construction and Closure

Road construction provides hunter access to previously inaccessible inland locations, and can in-crease subsistence competition. An increase in access would benefit short term subsistence use. However, based on historical use patterns and wildlife habitat capability models, increased sub-sistence harvest could compromise the population viability of wildlife resources, particularly the low populations of big game. Minimizing road access through road closures would help reduce these potential effects on subsistence resources. Road closures could be important for maintaining viable population levels of game animals that are

naturally low in the project area such as mountain goat, deer, and moose. Several roads proposed for timber harvest are recommended for closure following harvest to protect these resources. Closure of these roads would be coordinated with the needs of road closures and openings for other resources.

Road construction would also affect wildlife and subsistence resources through resource degradation of water quality, fish habitat, and soils. As identified in Good (1995a), BMPs would minimize these losses, with most impacts primarily occurring during the active logging period. These BMPs include bridge and culvert designs that allow fish passage and preserve water quality, and road erosion control plans.

Habitat Preservation

During preparation of the unit and road pool for the action alternatives, a literature review was conducted to determine areas of historical subsistence use. When possible, these areas were then deleted for consideration when identifying units and roads for the unit and road pool. The areas that have been excluded from the unit and road pool and their known subsistence resources are described below:

- Salt Chuck - where deer and waterfowl and other birds have been harvested,
- Farragut Bay North Arm - where salmon, fish, birds have been harvested and trapping of furbearers occurs,
- Area North of Farragut Bay North Arm - where mountain goats have been harvested,
- North Shore of Port Houghton East of Goldbelt, Inc. Lands - where trapping occurs,
- South Shoreline of Cape Fanshaw - where deer have been historically harvested, and
- West Shoreline of Cape Fanshaw - where marine invertebrates, salmon, seals, salmon and other finfish have been harvested.

Other Mitigation Practices

Logging camp facilities require special mitigation practices to decrease human disturbance effects on subsistence resources. In particular, land-based logging camps pose special problems by attracting black bears. Facilities should minimize unsanitary conditions associated with food preparation and disposal. Garbage disposal methods should eliminate the possibility of attracting bears by using bear-proof enclosures for storage and, if air quality regulations permit, garbage burning.

The exact use of subsistence resources are difficult to predict for the logging camp planned for the proposed project. It is assumed that harvest would be similar to

the existing harvest at the Hobart Bay logging camp. However, three species of big game (deer, bear, and moose) occur in the project area in low densities. It is recommended that roads are closed to motor vehicle access for hunting big game during timber harvest. Because deer and moose are difficult to find and observe in the project area, motorized travel restrictions on hunting these species in the project area should only be considered if hunting significantly increases. It is important to monitor subsistence and recreation harvest in the project area during timber harvest for all big game species. If a substantially increased subsistence and recreation harvest becomes detrimental to big game populations, then harvesting should be restricted based on decisions by ADF&G.

Cultural Resources

In all cases, mitigation of adverse effects to significant sites would follow the procedures set forth in Section 106 of the National Historic Preservation Act of 1966 and 36 CFR 800. Following these procedures would ensure that all of the public's concerns about cultural resources are effectively dealt with. This includes data collection, site protection and preservation, as well as confidentiality of site information.

Site-specific mitigation measures include:

- Mitigation of SUM-025, a multi-component prehistoric site, would be most appropriately handled by avoidance, preferably by not using the proposed North Point LTF. When SUM-025 was found, the North Point LTF site was relocated to avoid SUM-025 to the extent possible. If this LTF is selected, a multi-phased mitigation plan (including design of the LTF site) would be required to protect the cultural resources. This plan would be developed in detail as part of a Memorandum of Agreement signed by the Forest Service, the State Alaska Historic Preservation Office, and the Advisory Council on Historic Preservation. If no timber-related activities are allowed in the vicinity, then few if any project-related impacts would be expected at this site. If this is not possible, and the North Point LTF must be used, then the site will need to be carefully monitored with strict adherence to an avoidance policy by all personnel. If avoidance and monitoring are not effective, then data recovery (salvage excavation) may be necessary. Any construction in the immediate vicinity of the site should be monitored by a qualified archaeologist. Should mitigation be required, a data recovery plan and research design will need to be formulated to guide salvage excavations.

- Mitigation of impacts to SUM-055, a prehistoric site, would also be most appropriately accomplished by avoidance. If no timber-related activities are allowed in the Sandborn Canal drainage, then few if any project-related impacts would be expected at this site. If avoidance is not feasible, and Sandborn Canal must be used for timber harvest or road building activities, then some secondary effects may be anticipated. These could be partially mitigated by additional documentation of the site (detailed mapping and photography); however, an estuary site of this nature does not lend itself well to data recovery such as excavation.

Visual Resources

Design and development of the action alternatives, units, and roads considered visual impacts on a site specific and overall basis. The Forest Service's Visual

Management System encourage emulation of natural forest openings for unit design, and creating artificial "natural" openings. The mitigation measures that were incorporated in unit design have included the following:

- avoiding square corners and rigid geometry,
- avoiding thin screens of trees on ridgelines,
- avoiding long horizontal lines,
- ensuring that edges of clearings are irregular, especially the uphill backline,
- emulating alpine opening forms on ridges and slopes (even though alpine meadows would not be naturally present at lower elevations, the form would be usually viewed in context with existing alpine openings), and
- maintaining whole landscapes (for example, a protruding know would not be half clearcut because this would accentuate the difference between forest cover and clearcut).

Helicopter logging has been prescribed in roaded areas where visual impacts would otherwise be significant. Units were selected for alternatives considering the cumulative visual impacts for specific viewsheds.

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